Tracy A. Hurley *Editor*

Inclusive Access and Open Educational Resources E-text Programs in Higher Education

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Preface

Since my university initiated its Inclusive Access (IA) program in 2010, as the campus champion and program administrator, I have received countless phone calls from colleges and universities to provide insight and information about our program. While some calls were simply curious about our program, other schools called to collect information about our program in order to inform their process for establishing a similar program. Over the last 10 years, I have also received invitations to present at conferences on behalf of specific publishers and have received invitations to be a guest speaker at conferences that focus on student success. It was these calls and invitations that prompted me to write this edited volume and to solicit chapters from campuses throughout the United States who have IA and Open Educational Resources (OER) programs.

While our program was one of the first such programs in the United States at a public university, many colleges and universities have joined the movement and initiated their own programs. The goals of these programs are numerous but for the most part, they are designed with a top objective to save students money and to lower the cost of higher education. A secondary but also important goal is to improve student success.

In addition to IA programs, many schools are initiating programs that emphasize OER content. While the goals of IA and OER programs are often similar, OER programs focus exclusively on providing content free or nearly free to students while bypassing publishers and bookstores altogether. Content is often produced in-house by faculty with the intent of serving only local students but there is a growing trend to expand the availability of customizable OER content to other campuses through clearinghouses, aggregators, programs such as OpenStax, or hybrid IA/OER programs such as Flatworld.

The purpose of this volume is to inform college administrators, faculty, governmental policy-makers, and other influential people in higher education as to the benefits of IA/OER programs. For the most part, we know that IA/OER programs reduce prices for students. That has been pretty easy to measure. Several chapters in this volume provide support for that goal achievement. Evidence that IA/OER programs also contribute to student success has been much more elusive.

Part I of this volume provides some key policy discussions in order to inform policy-makers and higher-education administrators as to various important issues to be considered when starting an IA/OER program. Part II of this volume provides information on how IA/OER programs were initiated and sustained at various public and private, two-year and four-year colleges and universities in the United States. These chapters provide detailed information about how and why their IA/OER programs were initiated and what the various decision points were and the processes involved in making those decisions. Part III of this volume provides information relevant to student success. These chapters are evidence-based research studies that provide support, for the most part, that IA/OER programs enhance student success. Together, these three Parts of the volume provide important information and critical evidence that IA/OER programs can be built to achieve established goals at many different kinds of colleges.

I want to thank all of the authors and co-authors of the chapters included in this edited volume. It is their hard work and dedication that will inform future faculty, administrators, and policy-makers in their decision-making processes. Each of the programs highlighted in this book represents the culmination of years of meetings and open discussions on campuses about IA/OER programs. Most of the authors are campus champions of their program and have unique perspectives to share. It was an honor to work with each of them. We hope you enjoy the book and find it useful in your decision-making processes. For any additional information about the content of this book or about IA/OER programs in general, feel free to contact me.

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Policy Insights for Inclusive Access Programs

Chapter 1
Inclusive Access and Open Educational Resource Programs: A System Perspective

Tracy A. Hurley and James R. Hallmark

Administrative perspectives must be considered as colleges and universities consider the adoption and implementation of inclusive access/open educational resource (IA/OER) programs. This may be particularly true for public colleges and universities who must comply with state policies and in many instances university system regulations and who often face political pressures from legislatures and regents to address challenges brought forth by students. One such challenge, of course, is the cost of instruction/learning materials.

With this in mind, we asked academic members of the National Association of System Heads (NASH)[1] to respond to six questions to provide insight from a system-level perspective. Nine system-level academic officers (CAOs) responded to the questions based on their experience with IA/OER programs. The university systems who responded were as follows:

- Connecticut State Colleges & Universities
- University of Hawaii System
- University System of Maryland
- Minnesota State University System
- University of Nebraska System
- University System of New Hampshire
- University of North Texas

[1] The National Association of System Heads (NASH) is the association of the chief executives of the 46 colleges and university systems of public higher education in the United States and Puerto Rico (http://nashonline.org/).

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- Texas A&M University System
- West Virginia Higher Education Policy Commission (HEPC)/West Virginia Council for Community and Technical College Education (CTC)

Respondents will be referred to as "CAOs" in this document. Quotations attributed to a CAO will be set off in block indentation and will be provided anonymously. Original responses are available upon request.

The six questions (Q1 through Q6) that NASH members were asked to respond to were as follows:

Q1: From an administrator perspective, what do you see as being the most important items that any faculty or university/college administrator should consider when contemplating whether to begin an IA/OER program?

Q2: Obtaining authorization for course fees is often a hurdle for the implementation of inclusive access programs. What strategies may be effective in obtaining this fee authorization?

*Q3: Many programs utilize traditional textbook publishers (*e.g.*, Pearson, McGraw-Hill, Cengage,* etc.*) for their inclusive access programs. In this type of model, the quantity of e-books ordered is important in determining the price of e-books that publishers charge. What approach(es) might be effective in establishing a regional, state, or national clearinghouse (or agency) of colleges/universities to provide a path to minimize e-text prices?*

Q4: The goal of IA/OER is to improve learning while reducing costs. What other approaches do you suggest for achieving this goal? Why might these other approaches be more advantageous than inclusive access?

Q5: Many colleges and universities use OER as a tool of inclusive access. What incentives/efforts/programs may be useful in developing and identifying high quality OER, keeping OER materials up-to date, and/or offering OER instructor supplements?

Q6: Please provide additional thoughts or ideas that you may have, if any, which are not included in the above questions/answers.

Definitions

For clarity in discussion of terms:

- IA programs are e-text-based programs developed by for-profit textbook publishers that are bundled within the course and offered at a reduced price over their traditional textbook bookstore sales.
- OER programs, on the other hand, are e-text/content-based projects that are not developed in a for-profit model. Instead, the content is developed by faculty and scholars in the discipline and offered to students in a formal or informal process. Generally
    - OER content is free, nearly free, or very low cost and is under a Creative Commons License.

- Provides maximum opportunity for faculty and students to adapt and modify the content to best suit their course and learning goals.

OER's flexibility appears to be highly valued by the CAOs.

> …we have found that the ability for faculty to adapt and modify OER texts has led to important gains in equity work…. For example, faculty can modify case studies for local interest, edit textbook names to reflect those of their students, and so on for cultural relevance. Publisher texts, no matter how affordable, do not allow this type of modification.

A Student Focus

Student-centric perspectives permeated the responses from the CAOs. Clearly, the CAOs are considering the impact of the cost, availability, and quality of instructional materials on the students. Several CAOs provided comments consistent with an understanding of the impact on the students of instructional materials and their costs.

> The student is always the most important consideration. This is particularly true in a state such as [state redacted] with a large number of first-generation students. These students already face certain challenges in persistence to degree completion. Removing barriers such as the cost of a textbook is an important element in increasing college attainment goals.

Textbook costs often result in students beginning courses without the necessary instructional materials to be successful. With IA/OER, the student does not need to expend additional resources beyond tuition and fees to obtain the necessary course content by the first day of class. The materials are made available through their student fees (IA) or freely accessed generally through web-based materials (OER). This is highly desirable to faculty who prefer students to have the instructional materials when classes commence.

> For faculty there appear to be various considerations but they seem to boil down to student access to materials… the majority of our faculty members were more concerned about first day access than they were about costs, although they realize the occasional relationship between the two factors.

Presumably, faculty do not (or at least prefer not to) assign homework or readings if the students do not yet have access to the learning materials. Delays in student access to materials hinder faculty from teaching courses as they would prefer.

When considering the student experience, the quality of the students' academic experience is paramount.

> The place to begin in this conversation is academic integrity: the quality of the academic experience for the student. What obstacles do the students face in accessing instructional materials? What percentage of students are not purchasing textbooks? How useful are the existing textbooks? …It all hinges on the academic experience for the student.

The student experience—assuring the students have the appropriate materials on the first day of class and assuring those materials are high quality and affordable—is paramount to CAOs.

A Faculty Focus

The connective tissue between IA/OER and students is the faculty. Faculty are who identify learning materials and assign those materials for student use. Without faculty engagement in the development and implementation of IA/OER, it will not be successful. The CAOs mention faculty in a variety of ways, often in the realm of incentives.

Faculty reward structures must be adjusted to incentivize the creation and maintenance of course content. However, in many colleges and universities, the development of instructional materials (inclusive of textbooks) carries little weight in the merit, promotion, and tenure process.

> …consider how the evaluation and reward structure will acknowledge the work of the faculty members developing OER textbooks. Don't assume that this change in the evaluation and reward structure will be a bottom up approach since many of the faculty "jumping at the chance" to develop OER textbooks also are not the senior faculty that lead department promotion and tenure committees. At best, consider a bottom up *and* top down approach to determining how OER textbook development is acknowledged and rewarded.

This CAO identified a real challenge that administrators must consider: those faculty who are "jumping at the chance" are not the faculty leading the tenure and promotion committees. Another CAO observed

> We found the observation critical, in understanding who is most likely to engage in OER. It is most likely those untenured. Does the time and effort required to create OER interfere with the faculty member's pursuit of tenure and promotion?

The most reasonable means of addressing this challenge is an adjustment in the traditional faculty reward structures. This is not an easy task, but is one more easily led by high-level administrators than by untenured faculty. Faculty should not be expected to sacrifice their careers to develop a textbook or OER materials. CAOs view it as a leadership issue.

> There needs to be leadership that says "we are going to get there in this department." Faculty time must be granted to allow the identification of the appropriate resources. Institutional rewards like tenure and promotion and merit must take into account the time and effort.

One avenue calling for senior leadership is broadening the scope of what is considered "scholarship." The "scholarship of teaching" is obviously not a new subject, but is one that is discussed more often than it is implemented.

> There is an opportunity to use OER's increasing popularity as a means of rejuvenating the "scholarship of teaching." There is a new generation of faculty that would benefit from understanding the power of using the evaluation and research tools and methods available to improve their teaching and, at the same time, insure that students are improving learning.

It is essential that academic leaders, including those at the system level, play a leadership role in changing the reward structures—tenure, promotion, merit—so faculty work on IA/OER may flourish.

A rather simple and direct reward for faculty is buying their time and effort through small grants. Incentivizing faculty to develop OER through small grants was mentioned by several CAOs.

> [System name] has an extensive open education initiative that seeds 45 faculty members per year across our system to convert to open resources and expand the open pedagogical practices they incorporate into their teaching. Those seed grants fund faculty time and their participating in a year-long professional development community that helps them as they work to make higher ed[ucation] more accessible.

These are apparently relatively small grants, as they are described as "small incentives" to faculty for development or adoption of OER. Still, these small incentives have resulted in $6 million saved in student textbook costs in this one system alone. From another CAO:

> We have initially used external funding mechanisms, including $100k provided by the State to incent[ivize] the development of OERs. Small grants are provided to faculty to initiate the work. After the initial development of the OERs, the campus and colleagues are responsible for the continuation of the work.

Few rewards are more coveted by faculty than "time," and CAOs have means of influencing the availability of time through assigned/release time allocations. Time is needed to research IA or OER opportunities, selection of materials (regardless of whether the selection is IA or OER), preparation of materials, and implementation of the solution. To expect faculty to do this while they are fully engaged in teaching full loads and/or engaging in a research agenda is unreasonable. Furthermore, the amount of time necessary to use OER could be a detriment to implementation.

> An instructional materials solution that results in them [faculty] having to spend inordinate amounts of time tracking down materials is of little value. I want our faculty to be engaged in research and engaging with students, not desperately trying to find a chart or diagram they used to use. (Or even worse, finding the chart but searching for a legal way to use it.)

In summary, reward structures must be created or adjusted to assure faculty are appropriately incentivized. In order for OER programs to be effective, CAOs suggest that small grants or summer stipends be used to incentivize faculty to participate in the content creation and adoption process. External funding opportunities might also provide support. Furthermore, college and universities should consider rewarding faculty through the merit, promotion, and tenure process for creating and maintaining OER content. This might be accomplished through the inclusion of specific Scholarship of Teaching and Learning guidelines within the college and university promotion and tenure reward systems.

A Support Team Focus

Though faculty are the connective tissue between students and the instructional materials, faculty cannot do this without a support team and a support structure. Instructional designers, teaching/learning centers, assessment offices, librarians,

department heads and deans, business office functions, and a wide range of positions are necessary for IA/OER to bear fruit.

> As an additional thought I can't emphasize enough the importance of providing technical, pedagogical, and assessment training for faculty as part of this implementation. For many faculty digital first day access represents an opportunity to totally change the way they teach. To expect that just to happen magically is naïve. Faculty probably need to be required to take some sort of training and be given strong support. All publishers are able to provide some of this support in their work directly with faculty, and the institution should contextualize it by providing some basic parameters of the training while working in partnership with the publishers or other support organizations to achieve it at scale.

We must focus on the students and the faculty, but ultimately without the proper support structures, we are unlikely to achieve success.

> I think the most important things to consider are the administrative details. The legal, financial, registration, faculty support, bookstore, bursar, and communication functions are shared and therefore many different units have to be on board to make it work. This type of collaboration requires more lead time, more patience, and more need to compromise to accommodate the various other activities of these offices.

Careful planning is of paramount importance as colleges and universities consider initiating an IA/OER program. With primary goals to include reducing the cost of higher education, provide content to students by the first day of class, and enhance the students' learning environment, a combination of IA/OER options might provide the most robust and flexible solution for many campuses. A small pilot program which utilizes a team of faculty, librarians, as well as technology and analytics support staff, may be the most important initial step in establishing an IA/OER program which meets campus' goals.

Pilot/Assessments

The pilot program should begin with a faculty awareness program to ensure faculty are informed and aware of the current textbook industry landscape. The pilot should be a collaborative effort between interested faculty, librarians, and technology and analytic support personnel. The pilot should include a robust evaluation process to evaluate program effectiveness in lowering costs, improving student outcomes, and a review of both the benefits and potential harm or unintended consequences to students.

> Start small (pilots) and work with faculty who are willing to move in this direction. Focus on high enrollment, general education courses where the opportunities to save students the most amount of money are possible. Evaluate the experience to make certain that the OER textbook does not harm the student in achieving the course outcomes. Additionally, encourage teams of faculty, librarians and technology staff from the beginning. This will minimize the frustration of the faculty member and likely speed up the completion of the OER textbooks.

As the pilot is developed, it is important to:

- Understand what student data is being captured by third-party vendors (e.g., publishers) and their respective privacy policies and compliance with system and university policies.
- Establish a process for selecting content that is available by the first day of class that ensures academic integrity and freedom so that the faculty member(s) remain in control of their course. The content also needs to be accessible by all students.
- Establish strong administrative plans and support for the program in terms of legal, financial, registration, faculty support, bookstore, bursar, and communication functions.

It is important that the pilot evaluate program effectiveness and validity of the model to enable colleges to have the flexibility to develop programs that best meet the needs of their students and ensure that the program provides for the academic integrity for students and faculty.

Fees

As campuses contemplate adding a student fee to pay for IA/OER content, it is important to ensure that students are involved in the fee-review process. As with many student fees, most colleges and universities have an approval process—both on campus and often at the system level. As campus leadership reviews the list of potential fees to be added, it is important that leadership have the information needed to advocate for the expansion of the pilot program and formally add the student fee to pay for the IA/OER content. The justification for the fee needs to be based on valid and robust data from the pilot which demonstrates cost savings and an enhanced learning environment. In addition, campus leadership needs to be willing to make the fee a priority over other potential fees requested.

> …it is my belief that the real battle on this matter is on campus, convincing internal decision makers that THIS fee is important enough to be high priority, high enough to make it to the regents. The advocates for such a fee are in a battle for space on the list of proposed fees, and the competitors for inclusion on the list are well organized and powerful: fees to meet compliance on Title IX, fees to enhance diversity, fees to establish or enhance a sports program. The problem isn't the approval of the fee; the problem is that any academic fee has to compete with sports, student affairs, compliance, etc. for the expensive real estate that is included on the list of proposed fees.

Other important factors to consider are whether students will be able to opt out of the program and whether the fee will be refundable if the student drops the course.

Collaborative Pricing

Often, contract specifics—especially price—are based on the quantity of e-texts purchased and the effectiveness of the university negotiator with the publisher. In general, the more e-texts that the university purchases from a publisher, the lower

the price will likely be within similar disciplines. Based on this information, it seems reasonable that lower costs might be achieved via the establishment of purchasing consortia—across system members, state members, or some other affiliation membership. Collaborative pricing is a common model utilized for the purchase of software and other technology purchases. While these kinds of pricing collaboratives may be effective in achieving lower prices, it is important that any agreement allows for academic integrity for each campus and their faculty. Similarly, it is important that such pricing collaboratives do not mandate common texts across the system, state, etc.

An Awareness Campaign

One CAO noted the value and importance of an awareness campaign to move the needle on OER adoption. This step in the process requires integration with student needs and faculty capacity and willingness, but extends beyond that to awareness.

> Most OER efforts start with an awareness campaign that highlights the need to reduce student costs and the benefits of OER as well as identifying existing faculty who have adopted OER and showcasing their successes and working with your librarians to create curated lists of high quality, highly adopted materials (from places like OpenStax). Grant programs certainly help with faculty adoption, but the awareness piece and catalyst for change need to be established first.

The need for an awareness campaign is likely underrated. Indeed, we have observed efforts that were inherently limited in scope due to the absence of across-the-board planning and implementation. An individual faculty member may well be able to convert his or her classes to OER, but to move larger segments of the university to OER requires greater coordination than is possible with one individual or even one office. In short, the library or a single academic department cannot do it alone. The faculty cannot do it alone. The provost cannot do it alone. The bursar cannot do it alone. Leadership is required "from the top" to allow all of these to be aware of the opportunity and to be aware of the need to work together to achieve what is possible.

In general, CAOs felt the system's primary role in the development of IA/OER programs is to establish policies which allow for innovation and flexibility, empowering colleges and universities to develop programs that fit their campus' goals and students' needs.

> …we work within a framework in which each institution works independently in budget and decision-making processes. We have [system] wide policies, but each campus implements those policies in the manner best suited for that campus…. In our system, the most important element in any initiative is flexibility, so we work with what we refer to as an "attraction" model. We develop an initiative in framework, and then seek funding (external) to support faculty or department/programs who wish to develop the program within the defined framework.

This is consistent with the CAO quoted earlier who establishes the goal and is agnostic in how the campuses achieve that goal. Furthermore, CAOs noted that it is essential to create systems that incentivize a broad spectrum of faculty, specifically within the reward structures of the faculty ranks.

A Cautionary Note on Extant Biases

While the authors do not believe IA and OER are inherently an either/or proposition, some of the CAOs shared negative experiences and expectations of IA. One respondent expressed a neutral position that is representative of the group as a whole:

> I don't want to push inclusive access, nor do I want to discourage it. Instead, the approach I have adopted is to decrease the cost of instructional materials. I've established the goal. I don't care if you get to that goal via inclusive access, or OER, or any number of other possible options that haven't been invented yet. Our role at a System office should be to establish the goal and allow the smart people who populate our universities the freedom and opportunity to explore ways to achieve that goal.

Nevertheless, some of these academic leaders perceived IA much more negatively. It was clear that one obstacle IA faces is a lack of trust in the publishing industry. One CAO noted,

> I would go beyond the obvious benefits to students to suggest that all faculty and administrators should understand the political economy of the global textbook trade and the multinational corporations that have essentially monopolized access to knowledge through textbook control…. the perpetuation of a for-profit system of knowledge acquisition and control that undermines the very purpose of higher education – the creation and *sharing* of knowledge.

Another CAO focused on the financial benefit IA offers for publishers.

> I tend to fall into the camp, "inclusive access is a windfall for the publishers." They come out way ahead with inclusive access, as they go from controlling a varying percentage of the book sales under the status quo to controlling 100% of the book sales with guaranteed revenue available to them as simple as invoicing the university. No more secondary markets. No more offsite competing bookstores. No more Amazon honing in and undercutting prices. It is a huge financial win for the publishers who win the textbook adoption. And the students are still paying for it.

One CAO summarized by stating, "IA programs are generally not advantageous to students. Limiting their use and exploring more open alternatives is a better approach." These comments should be sufficient to demonstrate that among some CAOs, IA is not a viable option, but rather is competitive with the superior option, OER. We do not take that position in this chapter, but find it incumbent to mention this as a potential system-level impediment to pursuing IA: leadership hesitancy or opposition to IA.

Conclusion

The CAOs offered several components necessary for IA/OER to be implemented, many of which require senior-level leadership. The focus must remain on the student experience, in terms of costs, quality, and availability, but also a significant focus must remain on the faculty. Faculty must be incentivized through changes in the reward structure and the availability of time and small grants. Meanwhile, senior leadership is necessary to effect fee changes (where necessary) and collaborative pricing. Furthermore, this senior leadership is required to bring all of the pieces together from disparate places within the university to enact change.

No magic elixir has yet been identified that moves the needle as quickly as most would prefer. It takes time and it takes work. One CAO offered these thoughts on where we may be heading.

> Open educational resources are the most logical yet most difficult to implement both from the administrative and instructional side. We haven't found any magic incentives to fan the flame of OER adoption in the curriculum. There appears to be an evolving market for a middle ground between purchased regular price textbooks and open educational resources, where publishers or other entities basically package OER materials, provide a platform for it, and sell it at a reduced price. I think there's going to be more and more of that model because of the tidiness of the products and the perceived value versus faculty workload.

Either way it is clear senior leadership is necessary to bring the pieces together for ultimate success.

NASH Member Contributors

Dr. Joann Boughman is Senior Vice Chancellor for Academic and Student Affairs for the 12 institutions in the **University System of Maryland**. Responsibilities include academic policy, academic planning and accountability, faculty affairs, program evaluation, transfer and articulation issues, academic innovation, cultural diversity, and student affairs, including Title IX and student health and wellness. Dr. Boughman received her bachelor's and PhD degrees from Indiana University.

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(USNH). She is a member of the USNH Academic Technology Steering committee, which has administered a system-wide open education initiative for the last 4 years. Currently, Dr. DeRosa is working to align the New Hampshire Open Education Public Consortium with other national statewide open education initiatives.

Susan M. Fritz is the Executive Vice President and Provost and the Dean of the Graduate College at the **University of Nebraska**. Dr. Fritz is a 1979 graduate of UNL; she received her master's degree in 1989 and her PhD in 1993, both from UNL. Because of her extensive experience in teaching and advising, she has been interested in strategies to engage faculty in addressing student access and affordability.

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Mike Simmons is the Assistant Vice President of Academic Affairs at the **University of North Texas**, where he leads a number of academic innovation projects, including Career Connect and Access Day One (inclusive access). Dr. Simmons holds a PhD in Public Administration and Urban Affairs from the University of Texas at Arlington and a master of Public Administration degree from the University of North Carolina at Chapel Hill. His Bachelor of Arts degree in History is from King College in Bristol, Tennessee.

Chapter 2
E-Books and Federal Civil Rights Legislation

Raymond M. Rose

June 29, 2010, the US Department of Education Office for Civil Rights in conjunction with the Civil Rights Division of the US Department of Justice sent a Dear Colleague letter addressed *Dear College or University President*. The letter began:

> We write to express concern on the part of the Department of Justice and the Department of Education that colleges and universities are using electronic book readers that are not accessible to students who are blind or have low vision and to seek your help in ensuring that this emerging technology is used in classroom settings in a manner that is permissible under federal law.[1]

The letter was in response to recently settled agreements with colleges and universities that used the Kindle DX. In the settlement, the universities agreed not to purchase, require, or recommend use of the Kindle DX or another electronic book reader or similar technology that was not accessible to people with visual disabilities.

While some folks thought the Dear College Letter (DCL) of June 29, 2010, imposed new legal obligations, it did not. What it did was reflect the growing understanding on the part of the Departments of Education and Justice about digital accessibility as covered under Section 504 of the Rehabilitation Act of 1973 and under Title II of the Americans with Disabilities Act of 1990.

Even though those laws had been in existence for decades, it wasn't until about 2008 that digital accessibility was an issue the enforcement agencies were learning about. The trail of enforcement actions primarily by the US Department of

[1] https://www2.ed.gov/about/offices/list/ocr/letters/colleague-20100629.html

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Education Office for Civil Rights (OCR) grows larger in the years following the DCL. But the initial findings and solutions were narrow.

Move to the present and the findings have become comprehensive and the resolution agreements much more detailed. The issue of digital accessibility results from the fact that the laws were passed before digital tools were in widespread educational use. But once OCR started to enforce the laws, the noncompliance letters and resulting resolutions became the guidance for the field.

In 1998, Congress amended the Rehabilitation Act of 1973 to require federal agencies make their electronic and information technology (EIT) accessible to people with disabilities. Though technically Section 508 only applied to federal agencies, it contained a set of standards that defined EIT accessibility. Those standards became the guidance that institutions are held accountable to use to improve digital accessibility.

In January 2018, the US Access Board, which is responsible for developing Information and Communications Technology accessibility standards to govern federal procurement practice, refreshed the guidelines. They updated and reorganized the standards to reflect advances in technology and to harmonize the requirements with other standards in the USA and abroad, including standards issued by the Word Wide Web Consortium (W3C). Web Content Accessibility Guidelines (WCAG 2.0) is recognized globally as the design standard for web content.

Now, both OCR and the US Department of Justice (DoJ) use WCAG 2.1 AA as the standard when investigating digital accessibility issues. WCAG 2.0 guidelines[2] address four major principles:

1. Perceivable
2. Operable
3. Understandable
4. Robust

There are three levels of implementation designated as A, AA, and AAA. These conformance levels progress from minimum (A) to maximum (AAA).[3] While the Section 508 refresh is currently tied to WCAG 2.0, W3C has released WCAG 2.1 and currently has a committee meeting to create WCAG 3.0. But, as of 2018, WCAG 2.0 AA is the standard educational institutions (both K-12 and higher education) need to meet to be fully in compliance with digital accessibility. Other legal actions have made it clear that businesses have an obligation to ensure their web and digital tools are covered under ADA and must meet WCAG 2.1 AA.

Students with Disabilities

There are accessibility concerns for print, as well as for digital materials. Students with print disabilities may face accessibility problems either with hard-copy materials or digital materials. While vision disabilities are the most obvious, dyslexia is

[2] https://www.w3.org/TR/WCAG20/

[3] https://www.w3.org/TR/UNDERSTANDING-WCAG20/conformance.html

more common than blindness. In the rest of this chapter, the focus will be on digital accessibility.

Higher education institutions have well-established procedures for making classroom accommodations for students who register their disability and ask for assistance. Accommodations are generally made for courses that take place in standard classrooms. Because digital materials are now a part of most learning environments, be they traditional classroom, blended, or fully online, this is where the change is needed.

While it is well known the number of students with a disability in higher education who choose to self-disclose their disability is relatively low, the institution still has the responsibility to ensure that learning is accessible to all students with disabilities. While it is hard to obtain accurate data, and estimates vary,[4] somewhere less than 30% of the students with disabilities will self-disclose their disability to the institution.[5]

Neither Section 504 or ADA requires that a person register their disability before learning materials be made accessible. The Department of Education's definition of accessibility is:

> Those with a disability are able to acquire the same information and engage in the same interactions—and within the same time frame—as those without disabilities.[6]

Digital information and resources need to be accessible for all students with disabilities, irrespective of whether or not the institution knows of the disability. Legally, the onus for making materials accessible rests with the institution. It is not acceptable for an instructor, or the institution, to require a student to locate instructional accessible materials on their own.

Though students who are blind or deaf possess obvious disabilities and more often register with their disability services office (DSO), there are greater numbers of students with other less observable disabilities. While "print disability" does not fall under the legally defined disability classification, it identifies the functional ability of students with one or more of a variety of disability. People with visual, physical, perceptual, developmental, cognitive, or learning disability can all be included in the larger print-disability category. And, people sometimes have more than one disability. There is not a single adaptive device that provides accessibility for all types of disabilities. As a result, ensuring that all students have access to digital resources requires evaluation of each student's unique needs, careful study of available digital learning resources designed for accessibility, and selection of the most appropriate.

The screen reader is one adaptive device used by people with reading disabilities to access e-books, websites, and other online content. A screen reader is a software application that reads aloud whatever is on the computer screen. The most obvious screen reader user is blind or has partial vision, but students with other print disabilities also use screen readers, as do students whose first language is not English.

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[4] https://www.bestcolleges.com/resources/college-planning-with-learning-disabilities/

[5] https://doi.org/10.1111/ldrp.12102

[6] OCR Compliance Review 11-11-2128, 06121583, paraphrased from 11-13-5001, 10122118, 11-11-6002

Screen readers start at the top left of the application screen and read text line by line from left to right, reading each line down the page. But, what happens when a screen reader encounters something that's not text? That depends on how accessible the material has been made. A properly accessibly formatted graphic will be coded with a text description of the graphic that is read by the screen reader. Tables designed to have headers identified are read correctly. If not designed to be screen reader accessible, then students using a screen reader are unable to acquire all the information in the document.

Another accessibility problem is encountered when EITs are designed to require a mouse for navigation. Students with motor disabilities may be using a different adaptive device to navigate a computer. It may be as simple as using the tab key to move from section to section or something more complex like a pointer controlled by air puffs. E-Books and all digital content should be accessible to people with motor disabilities.

Color selection and contrast are frequently cited by OCR and DoJ as accessibility issues. Color blindness, which takes a variety of forms, impacts males more than females and is not an obvious disability, and it is one that most institutional disability services offices do not consider a disability. However, the enforcement agencies do consider color blindness a disability. The accessibility issues occur when color is used as the only distinguishing trait in text and web design. If a direction says to select the red button for one action and green for the other, someone color-blind will be forced to guess. There are other issues including captioning of video and access to third-party web content that all play a role in accessibility.

Policy Implications

Any institution of higher education that receives federal funding normally has a comprehensive nondiscrimination statement that lists all the categories protected from discrimination. Though, in review of a number of institutional nondiscrimination statements, it can be seen disabilities are not in the forefront of thinking. Title IX gets a good deal of visibility because of the publicity it has received since it was passed, but Section 504, though equally as established, has not received the same level of recognition. The digital accessibility requirements of Section 504 and ADA are finally getting the recognition they deserve.

More recent settlement agreements (e.g., Dudley v Miami,[7] Wichita State,[8] Louisiana Tech[9]) point to the expectation that the institution will not just look at current accessibility issues, but will take action to prevent the purchase of EIT that

[7] https://www.ada.gov/miami_university_cd.html

[8] https://www.nfb.org/images/nfb/documents/pdf/higher-ed-toolkit/wichita-state-agreement.pdf

[9] https://www.washington.edu/accessibility/requirements/accessibility-cases-and-settlement-agreements/

is not accessible. It is necessary to explain to faculty that, if the EIT content they want to purchase is not accessible, they must find accessible alternatives. Additionally, those and other settlements require creating the position of accessibility coordinator; adoption and dissemination of policies; training for faculty, students, and staff; and an accessibility audit. Many colleges and universities have created an accessibility coordinator position even though they haven't had an OCR or DoJ settlement. Though there are a variety of titles, the people filling these positions generally have the lead in ensuring that the institution is taking action to confirm all digital materials are fully accessible to people with disabilities.

Once the institution has created policies about the use of accessible materials, the first line of defense is the staff who select the digital materials. Recently, a university selected a new textbook to be used in two of its graduate program courses. The hard-copy text included a DVD with video segments that were referenced in the text. The electronic version of the text had a website with the same video segments. Unfortunately, neither the DVD version nor the linked website version of the videos was captioned. Video that is not captioned is not accessible. The publisher's representative was contacted and told the textbook purchase would not happen without captioned video. Within a week, a new link was provided to the video content with closed captioning.

This story illustrates two issues. The most obvious is digital materials must be reviewed for accessibility before purchase. The second presents a more hidden issue, that of third-party websites. Any website link that is included in a course needs to meet the same accessibility standards as content within the institution's website. That would be interpreted to include web links included in an e-book used as a text. And the definition of website, used by OCR in its compliance reports, is very broad. It includes online courses and all other digital materials that are part of the institution.

The level of closed captioning of digital materials has been clearly specified both in WCAG 2.1 AA standards and in OCR and DoJ enforcement. It is expected that the captioning is at least 99% accurate and is timed to match the spoken words. Ideally, captioning should be properly capitalized and punctuated and also be descriptive when necessary. The need for 99% accuracy means that the 2020 level of auto-captioning provided by YouTube does not meet the acceptable level.

One more true story, though this is about a K-12 program. A statewide online education program required all courses to be reviewed against a set of quality standards, with one element of those standards being, of course, accessibility. The staff charged with conducting those reviews never received training on the standards and approved most of the courses submitted to them. It was only a few years later when it was pointed out that many of the courses approved were not fully accessible. The program had to go back to the vendors of the problem courses, inform them that their courses were erroneously approved, and require they have full accessibility retrofitted into the existing courses within a specified time frame. It is not easy to retrofit accessibility into digital materials and online courses that were not designed to be inclusive.

Below are two resources to help with the selection of accessible e-books. Ask your e-book vendor two questions: Do they have a VPAT for the product? Does their e-book conform to the EPUB 3.0 specification?

The VPAT (Voluntary Product Accessibility Template) is a document produced by the product vendor explaining how the EIT product conforms to the WCAG 2.0 standards.[10] The VPAT is generally a requirement in federal government solicitations. It is becoming common practice for higher education institutions to ask for the VPAT as part of their product solicitation. The key word in the title is "voluntary." Vendors complete the VPAT on their own. As a member of the Technology Working Group for the *Center on Online Learning and Students with Disabilities*,[11] we found the accuracy of vendor VPATs was dependent on who in the company completed the form. It was always most accurate when completed by the engineers that built the product and least accurate when left to the marketing people. Depending on their commitment to and understanding of accessibility, the VPAT may be helpful in the purchase process. In any event, do not rely only on the VPAT as the accessibility review; use it as a component of the review.

The International Digital Publishing Forum approved EPUB 3.0 in 2010 and it became effective as the Recommended Specification in October 2011.[12] The specification has been adopted as the format for digital books and helps improve their accessibility. But, while the standard has been widely adopted, its use doesn't automatically make a product that conforms to the EPUB 3.0 standard also meet the legal accessibility standards. So, like with the VPAT, knowing a digital product has been developed in conformance with EPUB 3.0 is a positive indicator, though it should not be the only component of a product accessibility review.

The Bottom Line

It is the responsibility of the academic institution to ensure *those with a disability are able to acquire the same information and engage in the same interactions—and within the same time frame—as those without disabilities.* The onus is therefore on the academic institution to be proactive in meeting its responsibilities under the laws.

Below are the basics.

In order to meet federal ADA Section 504 compliance regulations, your institution should have:

- An accessibility coordinator
- Policies about accessibility including a process to review digital content prior to purchase
- A plan that spells out how and when legacy EIT materials—that are not accessible—will be replaced
- People responsible for accessibility reviews of materials trained to recognize WCAG 2.0 AA standards and have the tools to help conduct those reviews

[10] https://www.section508.gov/sell/vpat

[11] http://www.centerononlinelearning.res.ku.edu/

[12] http://idpf.org/epub/30

Chapter 3
Open Educational Resources Grant Program: A Strategy for Student Savings in Texas

Kylah Torre

The Cost of Higher Education in Texas

College success is dependent on a complex array of factors, one of which is simple access to necessary educational materials. With textbook costs rising quickly in the past few decades, access to the resources required to succeed has become more challenging for students. Recognizing this problem, the Texas Legislature and the Texas Higher Education Coordinating Board (THECB), the agency providing direction for higher education in the state, have been working together to provide students in the state with the materials they need by incentivizing the use of Open Educational Resources (OER). OER are generally digital materials that students can access as no or low cost. In 2017, the 85th Texas Legislature, Regular Session, instituted a grant program to incentivize faculty members at public institutions of higher education in the state to develop courses using only OER, which were offered to students at no cost other than the cost of printing. Defined in statute as resources for teaching, learning, or research that are in the public domain or licensed for copyright in such a way that they can be adopted and adapted for use by any person, OER reduce costs for students, but also allow faculty and students the freedom to adapt the resources to their needs (Texas Education Code 51.451 (4-a)). The Texas OER Grant Program aids faculty members in adopting, adapting, and/or creating OER in order to offer these educational materials free to students.

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the Texas Higher Education Coordinating Board (THECB).

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The OER Grant Program was initiated in 2018, with the first round of grants going to faculty who developed or adopted OER for general education courses in the Texas Core Curriculum (TCC). These are classes that are required for all undergraduate students who attend public institutions in Texas and are meant to provide a solid foundation of essential knowledge and skills. TCC courses are transferable to any public institution in the state. While courses within the TCC might be comparable from institution to institution, the freedom to develop courses to fit the culture and demands of each individual institution is also crucial in a state as large and diverse as Texas. The OER Grant Program's focus on TCC courses is essential for serving the needs of students in the state public institutions and for working toward the goals of the state strategic plan for higher education, *60x30TX*.

This chapter will examine the particulars of the inaugural 2018 OER Grant Program, as well as other OER work in the state, and discuss the implications of this work for the *60x30TX* strategic plan. Strengths and challenges of the grant program will be explored in order to develop suggestions for the implementation of similar programs in other states. One example of a strength of the program is its focus on TCC courses.

OER and the Texas Higher Education Coordinating Board's Strategic Plan

In 2015, the THECB, the state agency that provides leadership and coordination for Texas higher education, launched a strategic plan, *60X30TX*,[1] with the overarching goal of having 60% of Texans ages 25–34 having completed a certificate or degree by 2030. *60X30TX* is a student-centered plan, with all of its goals reflecting the needs of students in the state to achieve higher education goals and be prepared to succeed in the workforce. Only 20% of students who were 8th graders in Texas in 2006 completed a college degree by 2017. This is far less than what will be necessary for the future job market in Texas. In order to maintain a strong economy and ensure the success of young people in Texas, it is essential that more students earn college credentials. Thus, *60X30TX* was conceived. The second goal of the *60X30TX* plan also has to do with completion of college credentials. In the year 2030, 550,000 students should complete a certificate, associate, bachelors, or master's from an institution of higher education in Texas. Completion is the first step toward building an educated workforce in Texas. The strategic plan was built around the assumption that an ever-increasing number of jobs will require college credentials. According to the Georgetown Center on Education and the Workforce, two out of three jobs in the United States now require some training beyond high school [4]. The *60X30TX* strategic plan is in part a plan for the future workforce of Texas, meant to maintain the economic strength of the state. Texas is currently the second largest economy in

[1] See 60x30TX.com for more information.

the country, behind only California [10], but will need to grow its population of educated workers for that to remain the case.

60X30TX considers not only the future of the state economy but also the well-being of its students and workers. Not only should students be earning credentials, they should be entering the workforce with awareness of how those credentials will help them to find and keep a job. Having a degree or certificate is crucial, but students also need to be able to articulate what they have learned in that process to employers. Students should be confident of the knowledge and skills that they bring into the job market. The third goal of *60X30TX* addresses these marketable skills gained in pursuit of college credentials. Degree and certificate programs should have identified marketable skills that are clearly communicated to students so that students can, in turn, communicate those skills to employers. Under the strategic plan, programs are required to clearly advertise the marketable skills that students are expected to take away.

Another way in which the strategic plan considers the well-being of students is to address the affordability of a college credential. With tuition having increased at exponential rates in the past few decades, many students are compelled to borrow money in order to be able to complete their programs. The *60X30TX* strategic plan recognizes the importance of student debt as a tool for completion of a college education, but aims to maintain that debt at reasonable levels so that students are not unduly burdened when trying to repay what they owe. The fourth goal of the strategic plan is to maintain student debt levels at less than 60% of first-year wages for graduates of Texas institutions of higher education.

The cost of attending college, as measured by tuition and fees, rose 63% between 2006 and 2016, according to the Bureau of Labor Statistics [3]. This compared to an increase in cost of 21% for all items. Currently, Texas ranks about average in the nation for the tuition and fees portion of the cost of public education [5]. Of course, tuition and fees are only a portion of the total. Housing costs for students grew 51% between 2006 and 2016, and housing insecurity is a troubling reality for some college students [3]. A survey conducted by the Hope Center for College, Community, and Justice found that 48% of community college and 41% of four-year university students who responded were food insecure [13]. The overall cost of attending college has risen substantially, and this can have dire consequences for students.

While the price of tuition and fees has become more burdensome, so too has the cost of educational materials. The price of college textbooks rose 88% between 2006 and 2016 [3]. This large increase in the price of educational materials is unsustainable for students. The end result is that students either wait to buy materials for their classes or decide to forego purchasing textbooks altogether [9]. Students may take fewer classes in a term so that they can buy books, potentially increasing their time to degree and their debt load [9]. If students choose not to buy books, their ability to succeed in their courses is compromised. Students may drop or fail courses as a direct result of the cost of the materials required. The cost of educational materials should be addressed when considering how to make the college experience more affordable for Texas students.

When considering how to maintain reasonable levels of student debt, the THECB and the state legislature have considered broadly the costs involved for students, and one of these costs is textbooks and other course materials. The affordability of these materials has been a topic of interest for the state legislature in its last two sessions (in 2017 and 2019). Several bills introduced in the state House of Representative and Senate have addressed the high price of textbooks and introduced possible alternatives to this cost for students. These bills, including the one that initiated a grant program to incentivize faculty to introduce free educational materials in their courses, will be discussed in depth later in the chapter.

The Possibilities of Open Educational Resources

The THECB and the Texas Legislature have, in the past two legislative sessions, been looking to Open Educational Resources (OER) as one way to address the high cost of educational materials. OER are materials that are licensed for copyright in such a way that they are available to others to adopt, adapt, and remix (while usually including proper attribution to the original author). A good litmus test for identifying OER is the 5 Rs as developed by David Wiley [14]:

1. Retain – can you make and own copies of the content?
2. Reuse – can the content be used in multiple ways?
3. Revise – can the content be altered?
4. Remix – can the content be combined with other materials to create something new?
5. Redistribute – can you share copies of the original content, remixes, or revisions?

OER are freely available for use in classrooms and are often cost-free to students as well. That said, the use of OER is not only about reducing costs for students but also about access. OER are available to students from day one of a course as there is no purchase required. The resources are adaptable and flexible and are (usually) digital and thus accessible from anywhere. There are many benefits to using OER in the classroom and even some evidence to suggest that the use of these materials improves student outcomes, which will be discussed further later in the chapter.

MIT's OpenCourseWare program was perhaps the first, best-known collection of OER (beginning in 2002), and the OER landscape has grown tremendously since those materials were first made available. Today there are multiple digital repositories of resources (such as OER Commons). There exist publishers of peer-reviewed OER textbooks (such as OpenStax), which are competing effectively with commercial publishers. The use of OER is booming worldwide, and several states have enacted grant programs or other policies to expand the use of OER. In 2017, the 85th Texas Legislature recognized the promise of these resources in meeting the goals of *60X30TX*.

Senate Bill 810: Open Educational Resources in Texas

Senate Bill 810 of the 85th Texas Legislature, Regular Session (now codified in statute as Texas Education Code 61.0068), was a result of the legislature recognizing the problem of affordability of educational resources. It had several parts, some of which addressed the affordability of resources for elementary and secondary education, which will not be discussed in this chapter. Two pieces of the bill were important to higher education in the state. First, the bill mandated that the THECB conduct a study on the feasibility of creating a digital repository of OER. Second, the bill called for a grant program to incentivize faculty at institutions of higher education to use OER in their courses.

A State Repository of OER

The study mandated by Senate Bill 810 consisted of a literature review and a gathering of stakeholders in the state to examine the feasibility and desirability of building a repository of OER for higher education. From 2009 to 2014, there had existed an online repository for digital resources utilized by some institutions of higher education in Texas, called the Texas Learning Object Repository (TxLOR). Unreliable funding eventually led to the repository becoming nonoperational. The report mandated by the 85th Texas Legislature examined the possibility of reopening TxLOR but found that it would be an expensive endeavor to resurrect that resource from scratch, as it had been out of use for several years. However, the conclusion of the report was that opening a digital repository for OER in Texas, focused on higher education, would be possible if the state contracted with an existing entity engaged in such work, such as OER Commons or the Texas Digital Library. The report made several other suggestions for how to maintain the portal and expand the use of OER in the state, including requiring that materials created with state funds be licensed with a Creative Commons license (i.e., be available for others to adopt and remix) and be made available through the repository. The report also recommended that faculty at institutions of higher education be incentivized to create, maintain, adopt, and review OER for the repository. Explicitly stated was a warning against mandating such activity for faculty in favor of encouraging them to participate through monetary and other incentives.

Encouraging faculty to create, adopt, and adapt OER for their courses was the second goal of Senate Bill 810. The bill created a grant program, administered by the THECB, which would pay stipends to faculty who adopted, adapted, or otherwise used only OER in the design of their courses. This grant program would be a first step in curating and creating a collection of OER that could be utilized by faculty and students across the state. The OER would be free to use and would replace costly textbooks and other course materials.

Open Educational Resources Grant Program

The first Request for Applications (RFA) for the Open Educational Resources Grant Program (OERGP) was released in July 2018, and in October 2018, a first round of awardees was announced. These were individual faculty members at both 2-year and 4-year public institutions in the state. Faculty were initially awarded $5000 for using OER in a single course and $10,000 for using OER in multiple courses. It was required that the courses utilize only OER and that all materials be free to students with the exception of printing costs (should students choose to print the resources). Most faculty awardees chose to adopt and adapt existing OER (usually a digital textbook) and to develop ancillary materials to complete the course resources. Some faculty worked from scratch to create OER in their content area. The grant is flexible in allowing faculty members, who are the experts in their particular fields, the freedom to curate existing OER or create OER as they see fit. There were 41 applications in the initial round of grant making, and 15 awardees were chosen from among them (Fig. 3.1).[2]

Type of Institution	Course(s)	Type of Project
4-year	Introduction to Philosophy	Adoption and adaptation
2-year	General Biology for Majors	Adoption and creation
4-year	Social Problems	Adoption and adaptation
4-year	Elementary Statistics I & II	Adoption and creation
2-year	College Algebra	Adoption, adaptation and creation
2-year	Introduction to Macroeconomics, Introduction to Microeconomics	Adoption and creation
4-year	U.S. History II	Adoption and creation
2-year	Introduction to Computing	Adoption, adaptation, and creation
2-year	Introduction to Symbolic Logic	Adoption and creation
4-year	General Chemistry for Majors I & II	Adoption and creation
2-year	Introduction to Sociology	Adoption and creation
2-year	Mathematics for Teachers	Adoption, adaptation, and creation
2-year	British Literature	Adoption and creation
2-year	English Composition I & II	Creation
4-year	U.S. History I	Adoption and creation

Fig. 3.1 2018 OERGP awardees

[2] More information about the grants and the evaluation instrument for the grant awards can be found in the Request for Applications at www.thecb.state.tx.us/OERGP

The statute for the grant program is written in such a way that funding is awarded directly to faculty members and individuals as income to compensate for the time and labor that it takes to create and/or curate OER for their courses. The institution that the faculty member is employed by has no official role in the distribution of funds, although successful grant applications generally did include some plan for institutional support, whether that be from the library, instructional designer(s), and/or department head. Several applicants who were awarded grants planned to collaborate with other faculty in their department in order to spread the use of OER for particular courses, and some faculty members enlisted the help of institutional research departments to track outcomes. One of the goals of the program is to have other faculty adopt the resources curated and created by grantees, and so institutional recognition and support of the work of the faculty applicant was taken into consideration, although not required. The institution employing the grantee faculty member had to certify that they were aware that an application was being submitted, but did not have an official role in either the application or grant administration process.

Three content experts reviewed all applications to the grant program. These were faculty at institutions of higher education in the state who volunteered their time to read and score applications. Applications that were not chosen for an award received feedback from the reviewers anonymously in the form of comments made on each section. One possibly future opportunity for the OERGP is in expanding the role of peer review. While content experts reviewed applications, there was no requirement in the statute for the OER adopted, adapted, or created for the program to be peer reviewed. While the RFA called for the OER in question to be of sufficient quality to enhance the course curricula, there was no external review process for deliverables built into the first round of the grant program. Such a peer review process would require significant time on the part of faculty reviewers, and funding allotted to the grant program was insufficient to compensate external experts for such a process. As surveys indicate that one of the main concerns among faculty who consider adopting OER is the quality of the materials [12], a method for peer review could help to facilitate this process. Some existing repositories, such as Merlot, allow individuals who use available materials to review them on an informal basis through ratings and entering comments. Some process such as this may be a consideration for when and if a state repository for OER and other digital materials is created.

The statute is fairly prescriptive about how the success of the grant program should be measured. Legislators seemed to be most concerned with saving students money, and so that is an important metric of success for the program. THECB also wanted to learn about student outcomes and so the RFA for the program mandated that drop/withdraw rates and grades also be provided for a baseline semester (before OER were used to teach the course) and for each semester that OER were used. Because the RFA also required that all of the materials for courses under the program used only OER, the intention was to determine whether the use of OER improved student learning outcomes as well as saving students money on textbooks. Faculty members are required to teach the course or courses using OER four times

over the course of the grant period and to track student savings and outcomes for each of those terms.

Initially the RFA for the grant program called for the use of a Creative Commons-Attribution-NonCommercial-ShareAlike license (CC BY-NC-SA) for all OER created under the program. This license would allow others to copy and change the work but would prohibit use of the work or derivatives for commercial purposes and would require that derivatives be licensed with the same CC BY-NC-SA license when shared. There are several varieties of Creative Commons licensing, and CC BY-NC-SA is among the most restrictive in terms of the permissions it allows users of the OER carrying the license.

OER advocates in the state protested the CC BY-NC-SA requirement, suggesting that a license with fewer restrictions would be more useful to faculty. After consulting with several interested parties, an addendum was issued to the RFA for the OERGP, which changed the license required for works created under the grant program to a Creative Commons Attribution (CC-BY) license. The thought was that a more open license would allow faculty at other institutions greater freedom in adopting and adapting the materials created by awardees of the grant program. Ultimately, the goal of the grant program was to create OER for courses within the Texas Core Curriculum, which are a set of general education courses that are required for students in Texas. Making those resources freely available to all faculty and students across the state and as easy to use as possible could help to incentivize more faculty to utilize OER in their classes, which was the ultimate goal of the program.

The first round of the grant program focused on TCC courses. These are general education courses that all students in Texas must complete for a degree. Forty-two semester credit hours are required in categories of Communication, Mathematics, Life and Physical Science, Language, Philosophy and Culture, Creative Arts, American History, Government/Political Science, and Social and Behavioral Sciences. Institutions submit courses to fulfill core requirements, which are approved by the THECB based on a set of criteria in each category. TCC courses are transferable between any institution in the state, and a student who is "core complete" (has taken all 42 required hours) cannot be asked to take additional courses at a transfer institution in the core areas.

The initial round of the OER Grant Program focused on courses within the TCC with high proven enrollments. Applicants could earn priority points during the scoring of applications for courses that had high enrollments in the baseline semester (the semester that the course was taught immediately prior to submitting the application). Due to the fact that these courses are offered in many institutions around the state, the creation and curation of OER materials in these areas could have a significant impact on student savings, should faculty at multiple institutions be inspired to use the OER available. Regardless, courses with high enrollments at a single institution could have an effect on a fairly large number of students throughout the grant period. Faculty grantees are required to teach the applicable course(s) with OER four times during the grant period (which is roughly 2 years long). Potentially, a large number of students could be impacted with the focus on high enrollment

courses even if faculty at other institutions did not choose to adopt the OER curated and created under the grant program. Another goal of the program was to have faculty grantees encourage other faculty members within their department to adopt OER and so the potential for student savings could increase with success in that endeavor.

The potential for student savings was ultimately the point of the grant program, and there is evidence from other states to suggest that such an endeavor could be successful. North Dakota and Georgia have instituted OER programs and have seen large returns for students. Affordable Learning Georgia OER programs have saved students $61.9 million dollars since fiscal year 2014–2015 [1]. In North Dakota, OER programs have saved students between $1.1 million and $2.4 million since the fall semester of 2014 [11]. SPARC, an advocacy group that tracks OER adoption worldwide, estimates that students have saved over $1 billion through the use of OER since the organization issued a challenge in 2013 to spread the use of OER [2]. The Texas OER Grant Program holds great promise for decreasing the cost of educational materials for a significant number of students in the state.

Not only do OER programs save students money, there is some evidence to suggest that the use of OER in courses improves student outcomes. At Tidewater Community College Virginia, a comparison of OER sections and sections using traditional textbooks found that students using OER had a slightly better "course throughput" rate (encompassing drop/withdrawal rates and students passing with a C or better) [8]. At the University of Georgia, a comparison of student outcomes (grades and drop/fail/withdrawal rates) of courses pre-OER adoption and after found that students performed better when using OER [6]. This was true for Pell grant recipients, part-time students, and underrepresented populations when disaggregated. In a multi-institutional study, a comparison of OER sections and sections using traditional textbooks at four 4-year institutions and six community colleges found that students in OER sections performed as well or better than those who used traditional textbooks. Students in OER sections also enrolled in a significantly higher number of credits in the following semester [7]. While there has not yet been a great amount of research done about the impacts of OER on student savings and student course outcomes, it is clear from these select studies that OER at least has the potential to greatly benefit students and is one tool for state governments and institutions to consider when contemplating how to better serve students. The first round of data on the Texas OER Grant Program will be collected in December 2019, including dollars saved and the impact of the program on grades and drop/withdrawal rates.

Challenges in Administration of the Grant Program

The first round of the OER Grant Program was not without some challenges. One was the logistical challenge of providing grants directly to individual faculty members. THECB administers several grant programs, but in the past funding has been directed to institutions. The statute for the OER Grant Program, however, was writ-

ten in such a way that faculty members were to be the direct beneficiaries. Institutions were not to have an administrative role in distributing grant funds. Also, institutions had no direct role in ensuring the quality of the OER adopted, adapted, or produced as part of the grant program. However, as stated, most successful grant applications had faculty partnering with librarians, instructional designers, or others at their institutions to fulfill the grant requirements. Of course, those staff members were not necessarily compensated for their time and effort.

Another demanding piece for faculty was ensuring that the materials curated and created were actually OER (licensed with an appropriate Creative Commons license) and that there were no copyright infringement issues with the materials they chose to adopt or adapt for their courses. As many of the faculty who were awarded grants had not previously worked with OER, this was a learning process that often involved working with library personnel.

Another challenge of the program was the requirement for faculty to make the OER they were adopting, adapting, or creating freely available to students and faculty across the state. This was mandated in the RFA for the program and, indeed, was the ultimate purpose of the grant program. The idea was to have resources for TCC courses that were free, open, and accessible so that anyone teaching one of the funded courses could adopt or adapt the OER and provide no cost materials to their students. Although the THECB has future plans to build an OER repository for the state, there was no central site in existence available to faculty to upload their materials when these first deliverables were due. Some faculty used sites like MyOpenMath to curate their materials. Others wanted to develop course shells for Learning Management Systems such as Canvas. However, the requirement that the materials be openly available to anyone limited faculty grantees as they could only post the materials on sites that were publicly accessible and not password-protected or behind a pay wall. Some institutions already had digital repositories for educational materials that were available to faculty and some grantees adopted/adapted OER that was publicly available on other sites. This means that the deliverables for the first round of the OER Grant Program are technically available to anyone to use but are not yet curated in a centralized location. This creates a challenge for faculty at other institutions who might be willing to adopt the OER that grantees have developed if it was readily available.

Future Directions

In the 86th legislative session (in 2019), the THECB requested $250,000 from the legislature to initiate a state repository for OER, in lieu of the findings of the feasibility study that came out of the 2017 legislative session. House Bill 3652 called for the creation of the repository, for it to be searchable, and for materials created with state funds to be licensed with a Creative Commons license and made available to the repository. The THECB.legislative request also called for $200,000 to continue the OER Grant Program. These requests were granted in legislative appropriations.

This means that a state OER repository will be created by September of 2020. The THECB has plans to further incentivize the 2018 faculty grantees to upload or link their materials in the repository and then create plans for the maintenance and updating of those materials over the course of the grant period, which ends in August of 2021. As well, all future rounds of the OER Grant Program will include a requirement that faculty make their materials available through the repository so that faculty at other institutions can search and find the materials that have already been discovered, created, and curated for particular courses.

The plan for the creation of the state repository has THECB partnering with an existing entity to create a Texas-specific site. One benefit of this plan is that existing digital repositories, such OER Commons, do have some mechanisms in place for peer review, although those mechanisms are generally informal and require that faculty or others who use the materials take the time to review them and leave their comments as to the effectiveness of the materials. Future considerations for the OER Grant Program may include designing appropriate systems for peer review of the materials. That said, one advantage of using OER is that the materials can be revised by anyone, and so, in theory at least, those materials uploaded into the state repository can be improved over time as they are used.

The 2019 Texas Legislature showed a lot of interest in moving forward with OER projects in the state. Interestingly, a bill which would have allowed institutions of higher education to include the price of course materials in tuition and required fees, which would essentially pave the way for institutions to engage in Inclusive Access programs, did not move forward. Inclusive Access programs are products of commercial publishers where students pay for their course materials up front and have the option of opting out. Publishers can charge less for these programs than traditional textbooks because they are guaranteed to have a substantial percentage of students buying into their product. Although ensuring more affordable course materials seemed to be a goal of the 86th Texas Legislature, HB 3652 did not leave committee to go to a full vote. OER advocates have warned against Inclusive Access programs because of the possibility of price increases once students are locked into the required materials and because of the possibility of student data being misused. It is unclear whether these concerns were taken into consideration in the decision not to move the bill forward.

Final Thoughts

OER have been one tool utilized by the Texas Legislature and the THECB to address the high cost of educational materials for college students and work toward achieving the goals of the strategic plan, *60X30TX*. The first round of the OER Grant Program was not without challenges, and out of it emerged several ideas for how to best serve students through OER programs.

1. Incentivize faculty

   The OER Grant Program was meant to encourage faculty to adopt, adapt, or create OER. Faculty in the state are not in any way required to use these materials. Mandating the use of OER, even in general education courses, would likely backfire as faculty are rightly used to choosing the appropriate materials for their courses based on their expertise and comfort. Providing additional income for faculty who put in the time and labor necessary to convert their course to OER is one way of incentivizing the spread of OER in the state. The hope is that once there is a library of available OER that has been tested by faculty, others will follow suit. The state chose to incentivize the use of OER rather that requiring it, which maintains the academic freedom of faculty.
2. Encourage institutional support

   OER Grant Program applicants were seemingly most successful when they achieved institutional buy-in to their plans to convert their courses to OER. This could be as simple as enlisting the support of a department chair who would encourage other faculty members to use the OER created or adapted for a particular course by a grantee. This level of support is key when working toward the goal of spreading the use of OER and offering the benefits of free and accessible materials to more students.
3. Focus on high enrollment

   The focus of the OER Grant Program on general education, high enrollment courses, is one way to maximize the return on investment for the state as the more students who have access to OER, the more the state investment results in student savings. The next round of the OER Grant Program may expand the targeted courses to allow for high enrollment classes within particular popular majors or fields.
4. Facilitate peer review of materials

   While not currently a focus of the OER Grant Program, peer review of the materials created could be helpful in encouraging more faculty to use OER. The quality of the materials might be in question until content experts have adopted and recommended them. Partially this concern can be addressed by the grantees themselves using the materials with success in their courses, but it would be a helpful consideration moving forward to have some mechanism for peer review built into the program. Including some means for informal peer review in the upcoming state repository could be a first step to addressing this issue and could be easily done by partnering with an existing digital OER portal to create a Texas-specific site where faculty can rate available OER.
5. Provide a centralized location

   The digital repository for OER that will be built by the Texas Higher Education Coordinating Board should facilitate further adoption of materials created or adapted under the grant program by considering ease of use. If faculty are able to access OER in a centralized location, they may be more likely to be willing to try out those materials in their courses. Advertising the existence of the OER repository could be a challenge. THECB could utilize existing channels of communication with institutions in the form of administrative committees and desig-

nated liaisons to help spread the word that these materials are accessible to faculty and students alike.

OER programs in Texas are in their infancy, and it has been a learning process for all involved to determine how to best spread the use of these low-cost materials in order to serve the students in the state. The next round of the OER Grant Program is currently under development, and the repository is scheduled to launch by September 2020. OER have become a popular tool in Texas for addressing the high cost of a college education, and the state OER programs should continue to grow and adapt as lessons are learned about how to make them more effective.

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Part II
Case Studies of Inclusive Access and Open Educational Resources Programs

Chapter 4
Indiana University's Faculty-Driven Inclusive Access E-Text Program

Serdar Abaci and Joshua Quick

Introduction

Electronic textbooks (also known as e-texts) have become a viable (and often more affordable) alternative to high-cost college textbooks, whose prices increased at a faster rate than any other educational resource in the last decade [6]. In response, many universities are trying to lower the cost of textbooks for students including Indiana University (IU). The IU e-text initiative is a university-wide faculty-driven inclusive access program: if a faculty chooses to use e-text for her class, all students in the class will get access to the course textbook on the first day of class, and they maintain access until they matriculate from IU. E-text adoption at IU has been growing strongly: in 2018 alone, 2382 faculty across the university adopted e-textbooks in 4185 sections, in which over 92,000 students read e-texts that resulted in $11.8 million savings in college cost.

Success of IU's e-text initiative is driven by several distinct components of the program, including publisher agreements leading to significant cost savings, a universal e-reader to streamline the access and experience, outreach efforts, and faculty and student support [2, 10]. Among these components, faculty adoption is the keystone of the program. Therefore, this case study presents IU's e-text implementation with a focus on how it supports faculty adoption, from outreach efforts and support for integration to faculty experience with adoption and use of e-texts. To get a broad perspective of faculty experience, we interviewed seven instructors with varying degrees of engagement with e-texts, asking about their initial motivations and intentions in the adoption of e-text, the drivers that led them to sustain their adoption, and

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the factors that contributed to faculty abandoning the use of e-text. We discuss the support mechanisms that university provides to sustain and grow the e-text program. We conclude with recommendations for developing a faculty-driven e-text program at the institution level.

Indiana University E-text Program

As a response to high cost of college education and textbook prices, higher education institutions across the United States are trying to lower the cost of textbooks for students. Indiana University (IU), as a large public research institution with over 110,000 students enrolled across eight campuses, launched an e-text initiative in 2009 with four primary goals:

1. Lower the cost of course materials for students
2. Provide high-quality materials of choice for faculty
3. Enable new tools for teaching and learning
4. Shape the terms of sustainable models that work for students, faculty, and authors

In this model, faculty decide if they want to use an e-text and choose their choice of publisher and the textbook, and each student in their courses gets a copy of the e-text and maintains their access until they matriculate from IU. This program started as a pilot but became a university-wide initiative in 2012. Since then, E-texts Program at IU has constantly grown, resulting in more than $48 million savings in textbook cost for students. Figure 4.1 provides a snapshot summary of IU's eTexts Program in terms of number of courses, unique textbook titles, and unique students it has reached as of summer 2019.

Description of the Success Drivers

IU's e-text program offers some distinct features that present the program as a model for e-text use in higher education.

- Faculty choice: Maybe the most critical factor behind IU's e-text model is that faculty have full control on their textbook selection. Adopting an e-text is an option, not a top-down strategy or a requirement. Instructors can choose to teach with an e-textbook, selecting from quality publisher-provided content while saving students significant cost. This was frequently communicated in all e-text communications.
- Publisher agreements: All Students Acquire (ASA) model offers significant cost savings for students while paying the content creators/authors and the publishers

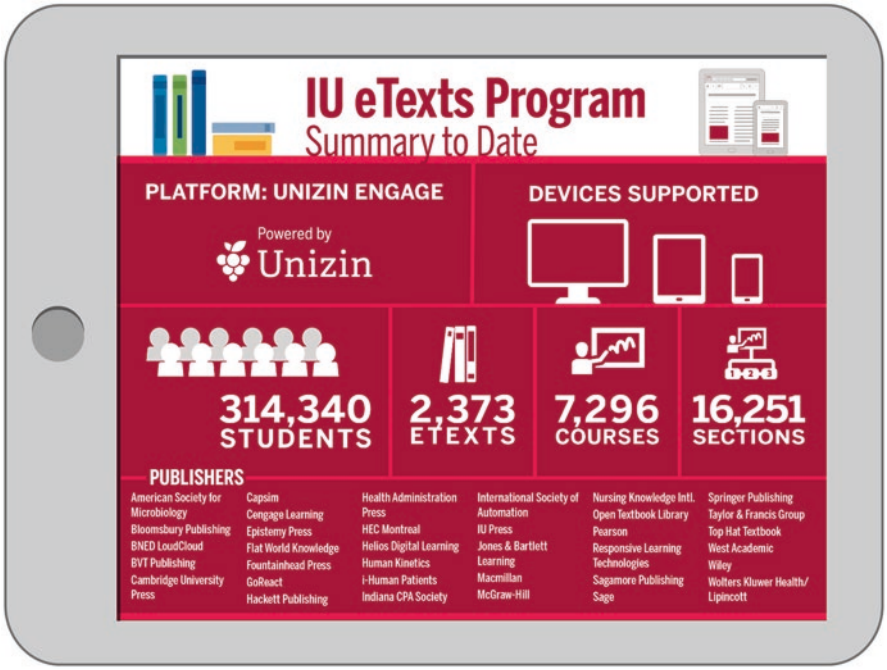

Fig. 4.1 Snapshot summary of IU E-Text program

fairly. With this model, IU negotiates with the textbook publishers directly or through Unizin Consortium, which handles negotiations for the consortium member institutions. Also known as *all-inclusive* or first-day access model, this agreement means the university volume purchases the selected e-textbook for each enrolled student in a course, which is then passed onto the students through Bursar billing. This allows IU to receive up to 65% discount on the list price of the textbooks. IU's agreement with publishers also enables students to maintain their access to the e-texts throughout their matriculation and print parts or the entire textbook without restrictions. More information on IU's publisher agreements is available in Wheeler [13].

- Universal e-reader platform: One single e-reader platform for all e-textbooks in the program, regardless of its publisher, lowers the resistance for e-textbook adoption and provides a streamlined and interactive experience for both faculty and students. Students do not need to create new or multiple accounts for multiple e-textbooks; they get to maintain access to their e-textbooks after any course as long as they are students at Indiana University. This reader also offers interactive features such as bookmarking, highlighting, and annotating, as well as ability to interact with classmates (through sharing notes) and the course instructor

(through question and answers). In addition, instructor bookmarks, highlights, and notes are automatically shared with students, which eliminate the need for another channel/medium (e.g., LMS message or announcement or discussion forum) to communicate textbook/content-related information.

- Outreach efforts: Communication with faculty on several fronts was paramount to adoption of e-text by the faculty. From the very beginning, the program leaders perceived the implementation of e-text initiative a cultural change, not just a new educational technology to adopt. Therefore, they followed an inclusive socialization process, in which they reach out to faculty frequently through multiple channels (e.g., emails, listservs, social media, and face-to-face in meetings and events) and by leaders who are empowered via their academic/university leadership positions. In this process, they solicited feedback from the faculty, answered questions, and eliminated the myths and rumors around the e-text program. Since its full implementation, IU's e-text program continues to outreach and engage with the faculty in order to increase adoption, support faculty use, and improve the program. To this end, dedicated staff for IU's e-text program serves as a central point of contact and liaison for all stakeholders, manages the operational functions of the program, and works with campus teaching centers to deliver workshops, webinars, and other instructional activities to promote the best-practice use of e-texts across all campuses of Indiana University. More information is available in Gosney and Morrone [14].
- Faculty and student support: Continued support for faculty and students is another key aspect for successful adoption and continued growth. Support for faculty starts with the ordering phase and continues throughout the use of e-text (from loading it to course LMS site and creating markups to monitoring student usage and transferring notes to another semester) through online and in-person means. As noted above, the dedicated e-text staff is the first line of support; however, staff in campus teaching centers are also equipped with the foundational knowledge to assist faculty for implementing the e-text into instructor's curriculum. Most of this information is also available on a project site on the University's LMS (Canvas), so that the instructors can access at any time. As of summer 2019, IU launched another Canvas site (Introduction to Using eTexts) for instructors with additional multimedia resources and best practices for teaching with e-texts. As created by university's instructional consultant team, this site provides video tutorials on Engage e-reader platform functions and features and offers instructional approaches to using e-text (and its features) effectively. Student support includes helping them with initial subscription (if they prefer a print copy or decide not to use e-text), offering training materials (online) on how to use the e-reader platform, and addressing any other technical issues they may encounter. Similar to the instructor support site, IU has a "Student Guide to IU eTexts" LMS site to offer anytime help and support for students. This site can also be integrated to any course LMS site as a module.

Adoption Versus Engagement: A Case Study

As we described above, faculty adoption is the keystone of IU's e-text program. Our previous research show that faculty also play a key role in how much students engage with e-textbooks [2, 3]. In a faculty-driven e-text program, understanding faculty's motivation for adoption and practices to use e-text becomes important for sustainability and growth of the program. Many studies with e-texts have tended to focus on student or faculty preferences and have been informed through voluntary survey methods (e.g., [1, 5, 7, 8]). While helpful in framing an understanding of e-text adoption within higher education, these investigations lack insight into the ways in which the varying factors of teaching and learning designs impact the implementation and application of any particular tool. As these factors have been highly supported in determining the efficacy of an educational tool for supporting teaching and learning, understanding the ways in which these aspects interact with the implementation of a tool is necessary for furthering the design, development, and implementation of educational technology across contexts. In order to understand the nuances of instructors' use of e-text and get a broad perspective of faculty experience, we adopted case study methodology [12] and interviewed seven instructors with varying degrees of engagement with e-texts, through a stratified sampling procedure. This procedure is outlined as follows:

- The log data of IU's e-texts from 2014 to 2018 was aggregated for instructors' and students' page views, highlights, notes, questions, and answers for each class. This resulted in 7470 courses, 1458 unique instructors, and 88,387 unique students that were within the scope of this analysis.
- From these descriptive summaries, it was determined that not all courses substantively used the annotation features (highlight, note, and question/answer) of the e-texts. Therefore, each class's median and instructor usage of page views and highlights was then compared with the grand median for all classes within that semester and for the specific campus within IU's system in which the class occurred.
- If an instructor's usage of the e-text was above the median instructor usage for that semester and campus, then the instructor was determined a "high" engager within the e-text; otherwise, the instructor was considered a "low" engager with the e-text. Similarly, classes whose students' median usage of page views and highlights was greater than the grand student median usage of page views and highlights were identified as a "high" level of student engagement with e-texts within the course; otherwise, the class was labeled as exhibiting a "low" level of student engagement with e-texts.
- From these classifications, stratified random sampling was used to select 20 potential courses for specific focus. Each of these instructors was contacted with a request for a brief, 30-min semi-structured interview wherein they could discuss the motivations, adoption, implementation, and application of e-text use in their courses.

Table 4.1 Course descriptions

Identifier	Subject/discipline	Level	Required in curriculum?	Delivery mode	Class size
Course 1	Anthropology	100	Yes	Face-to-face	35
Course 2	Philosophy	100	No	Online	33
Course 3	Political Science	100	Yes	Online	50
Course 4	Applied Sciences	200	Yes	Face-to-face	189
Course 5	Journalism	300	Yes	Face-to-face	24
Course 6	Public Health	300	No	Face-to-face	14
Course 7	Public and Environmental Affairs	400	No	Online	22

Of these 20, seven instructors agreed for an interview. These instructors also allowed their course e-text usage to be examined and provided a syllabus of their course. Course features and e-text usage by instructors and students are summarized in Tables 4.1 and 4.2, respectively.

Four out of seven courses were required in the respective curriculums. Except for Course 3, all instructors continue to use e-text in their courses. All but one instructor required students to complete the assigned readings (instructor in Course 6 did not require because he thought that it would not be fair to ask of students in an elective course). Except one instructor (Course 7), instructors made use of annotation features of e-texts, mainly using highlights and notes.

We analyzed the interview data according to "low" and "high" engagement classification, which was informed by the e-text usage data in Table 4.2. This enabled us to view instructor and student engagement in an engagement quadrant as depicted in Fig. 4.2.

Low Instructor Versus Low Student Engagement

- Instructor in Course 4 (2xx – Applied Science), who has been teaching at IU for 14 years and teaching with e-texts for the last 4 years, switched to e-text because she wanted everything to be online in a course she was going to teach online. Once switched, she also realized the cost savings for students; thus, she now uses the e-text for both her online and face-to-face courses. She also likes that first-day availability of the e-text relieves students from the excuse of not having the book. She uses e-text similar to a paper textbook as her use of annotation features is minimal (31 highlights). Moreover, she does not promote interaction through e-text for her students. In the past (one semester), she tried offering extra points for student markups, but it did not enhance student engagement. She also does not like the fact that the e-text platform does not send a notification (via email) if she gets a question through e-text. Instructor 4 also explains the low e-text engagement with the large size of her class as she noted "I don't know how much it serves as an interaction tool…it might be better in a smaller setting, like a small

Table 4.2 E-text usage by instructors and students

		Instructor usage				Student usage (average)			
Course	E-text Size(pgs)	Views	Highlights	Notes	Answers	Views	Highlights	Notes	Questions
Course 1	512	173	464	198	0	156	3	0	0
Course 2	475	110	93	8	0	222	54	0	0
Course 3	768	490	12	23	0	289	83	1	0
Course 4	568	42	31	1	0	50	6	0	0
Course 5	708	251	32	92	176	190	11	2	7
Course 6	704	1,113	8	101	0	176	102	2	0
Course 7	768	3	1	1	0	155	9	0	0

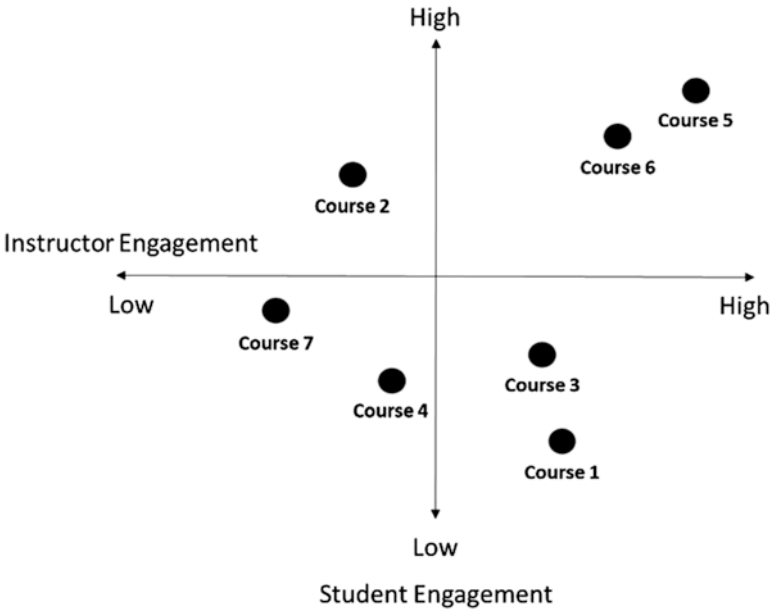

Fig. 4.2 Course distribution by instructor and student engagements with e-texts

class." She requires students to read the assigned chapters each week and assesses student reading through quizzes. She also monitors student reading activity in Engage Analytics interface, and she uses the reading analytics as a focal point in the office hours with struggling students.

- Instructor in Course 7 (4xx – Public and Environmental Affairs), who has been teaching at IU for 16 years and teaching with e-text for 3 years, started using e-texts mainly because of first-day availability and cost savings for students. She continues to use for these reasons. She has the lowest number of markups in e-text among the interviewed instructors, and she does not expect students to interact with e-text beyond weekly readings. She does not believe that using e-text creates a different experience for students; she argues that getting students to read the assigned text is a challenge (even for 20 min a week for her class). Thus, her class has weekly assessments that are directly tied to readings. Despite her low engagement with the e-text, instructor 7 often makes links and references in her online course site, such as links to the text in the discussion forum and case studies.

Low Instructor Versus High Student Engagement

- Instructor in Course 2 (1xx – Philosophy), who has been teaching at IU for nearly 20 years and has been teaching with e-text for 4 years, describes his motivation to switch as mainly cost advantage for students. While he still prefers paper text-

book, he acknowledges the benefits of e-texts such as sharing notes and highlights with students and being able to copy these annotations from semester to semester. "I like the idea of highlighting the text. I want to point out extremely important points to them [referring to notes and highlights]… so they wouldn't forget it…I haven't used much of answering student questions but I plan to use these features," he noted. As a result, he engages with the content and students through e-text. He does not promote student use of e-text markup features, but he noted that students had other means (i.e., email and discussion forum) to ask questions in his online class. Similar to Instructor 4 and 7, he assigns weekly quizzes, in which questions come directly from e-text. Students can take a quiz multiple times, but they need to answer 90% of the questions correctly to be able to move forward. It may be this requirement or because the e-textbook for this course has the lowest number of pages in this case study that students had the highest average reading percentage (47%), thus making it a high student engagement course.

High Instructor Versus Low Student Engagement

- Instructor in Course 1 (1xx – Anthropology), who has been teaching at IU for 18 years and teaching with e-text for 8 years, wanted to have an online textbook when she was asked to teach course online the first time. This e-text is now a department-wide textbook for both online and face-to-face courses. She describes the e-text and the course as being very dense such that her department considers splitting the course into two. In terms of her markup use within e-text, she has the highest number of highlights and notes among the studied courses. Her use of markups is intended to guide the students for quizzes and lab assignments, with notes such as *this is what you need to remember*. She transfers her markups to new semesters and updates them as needed. As she usually gets freshman students for this introductory course, she emphasizes how to use the e-text, Canvas (LMS), on the first day of class for her face-to-face class; she tries to do the same for online students through her "how to be successful in this class" notes. Despite her efforts to guide student attention in the e-text, her students are not as engaged with the e-text as she desires. She thinks that 60% of the students do not read the book, regardless of course or textbook being online. She believes that e-texts make it easier for students not to read.
- Instructor in Course 3 (1xx – Political Science), who has been teaching for 14 years and teaching with e-texts for 5 years, is one of the first adopters of e-texts at IU. His motivation to adopt an e-text was to make the course site (LMS) more "self-contained" providing the textbook content also online. However, he discontinued using e-text for this course due to the technical issues he encountered as well as not seeing students substantively engaging with the text. Even though he encouraged students to use the markups, particularly asking questions and sharing notes with other students within e-text, he did not receive any ques-

tions. He could see the use of markups through the analytics feature but could not see the content of the exchanged notes. He wished that analytics tool would allow instructors to do more analysis such as correlating grades to online reading or engagement.

High Instructor Versus High Student Engagement

- Instructor in Course 5 (3xx – Journalism), who has been teaching at IU for 7 years and teaching with e-texts for 5 years, was initially motivated by the cost advantage of e-texts. He later discovered some of the pedagogical affordances of the e-texts' interactive features such as questions and answers. Thus, he regularly uses markup features of the e-text in his courses. Particularly, he requires students to ask a question or express a thought through question feature within e-text every week. He then answers these questions before class time. Based on the questions he receives, he also plans the points of discussion as well as points for clarification during the class time. In addition, he makes updates to the textbook content as needed; content can change quickly, or an update to a particular case might be necessary due to the nature of course subject (i.e., Journalism). Instructor 5 is the only one in this study, and one of the few among all IU instructors, who utilizes question feature to enable student-instructor-content interaction through e-text. He believes that "it has an incredible impact on the quality of interaction between student and content." As he points out, though, it is difficult to attribute learning to this interaction. Nevertheless, he received positive student feedback in the end-of-course evaluations that the use of e-text enabled them to focus in this content-heavy course.
- Instructor in Course 6 (3xx – Public Health), who has been teaching at IU for only 1 year and teaching first time with e-text, adopted this format primarily due to the cost and availability reasons. He quickly recognized the additional advantages that markups can offer. As he noted, "I did try to mark some things that we would be focusing on. There were a few places I would use the markup feature to emphasize some places where something was the author's opinion or, frankly, if they got something wrong." His course is not a required one for any programs in the department; thus, he did not feel compelled to make the readings required. Similarly, he did not require students to use markups in the e-text. Unlike other courses in this analysis, the course did not have any assignment or quiz to assess student reading. Nevertheless, e-text usage statistics (Table 4.2) show that students were fairly engaged with the content. Self-selection of the course (elective compared to a required course) might be a factor in students' interest or engagement with the course content.

Discussion

Reasons for e-Text Adoption

Our interviews with instructors indicate that cost advantage of e-text, which is significantly higher in IU program compared to typical e-text options, is the primary reason for instructors to adopt. As in the case of Instructor 2, this might convince them against their preference for paper textbooks. This is not surprising, given that cost is the number one concern for the faculty while choosing educational materials, according to Allen and Seaman's report on faculty attitude toward open textbooks [4]. This report also highlights that cost issue is often contrasted with quality issue, which deters faculty from adopting an open textbook. IU's e-text model may be lowering faculty's adoption as faculty do not feel that they need to give up quality for affordable price. Another common reason for e-text adoption is to make their online courses completely online/digital. Once instructor makes the switch, it is common that they continue to use e-texts and adopt e-texts for their other courses. The only exception to sustained use was Instructor 3, who encountered technical difficulties with the particular e-text he used. There are many barriers to adopting an educational technology, including personal belief and attitudes, reliability of technology, or institutional/technical support [11]. These factors continue to play a role in sustaining the use of educational technology.

Engagement with e-Textbooks

As the e-text reading platform in IU's program offers interactive markup features such as shared instructor annotations, questions and answer features, and markup features for student use, we examined how instructors and students used these features in the courses we studied. Some of the instructor adopted e-text merely as a replacement to their paper counterparts, utilizing the markups minimally and not expecting the students to engage with the e-text beyond reading. On the other hand, potential benefits of the interactive markup tools attracted some other instructors. For example, *Instructor 1* used highlights and notes (shared with students) extensively to show where students need to pay attention for the course assignments in her content-heavy course. Despite her efforts, students' engagement with the e-text was low. In contrast, *Instructor 5* adapted his pedagogy around the question/answer feature in his course and required students to ask a question or express a thought through the e-text on a weekly basis. He then answered these questions and brought these points to the class discussion. This resulted in a high engagement and interaction between the instructor, students, and the content. These two examples suggest that when the technology affordances are coupled with the appropriate pedagogy, technology use may lend itself to better engagement and learning. Our data also show that student engagement, and engagement with course content in particular, is

also influenced by student factors. To illustrate, students in *Course 6* were highly engaged with the course content even though the readings were not required in this elective course. It is possible that students were self-motivated to read as they chose to take this course, as opposed to having to take a course to complete degree requirements.

Conclusion

Indiana University has a successful and growing university-wide, faculty-driven, all-students-acquire e-textbook program, which has saved its students over 14 million dollars in textbook cost since it started in 2012. We believe that success of this program lies in faculty interest and choice; all students acquire model negotiated with publishers, careful outreach and communication efforts adopted by program leaders and dedicated staff, and technical and pedagogical support for faculty and student users. Over 5 years into the full implementation of the program, our interviews with several instructors showed that adoption of e-text still stem primarily from cost savings. However, they also utilize markup features of the e-text platform to varying degrees. In comparison, student engagement with e-text might vary depending on instructor's pedagogical choices, student maturity in the program (freshman vs more senior students), or nature of the course (required vs elective).

IU's e-text program demonstrates that institutional adoption of e-textbooks can benefit students economically at a time when demand for college education is high and so is cost of attendance. However, it is not an easy undertaking and requires putting the faculty at the center of decision-making. As IU's program became successful, program leaders received inquiries from other higher education institutions that were considering similar solutions. To share IU's insights and lessons from the program with the higher education community, we published a free e-book, eTexts 101: A Practical Guide [10]. The book's first section relates the story of how IU developed and implemented its eTexts Program, the second offers perspectives from several publishers who have participated in the program, and the third provides reports from other universities on work they are doing to address the textbook issue.

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Chapter 5
Inclusive Access Impact on Student Outcomes in a Community College Network

Phillip Anaya and Dina Yankelewitz

Background

Alamo Colleges District is the largest provider of higher education in South Texas and enrolls over 60,000 students. The district is comprised of five independently accredited colleges. A diverse institution, nearly 24% of its student body is White, 8.1% are African American, and 62.4% are Hispanic. Over 72% of students receive financial aid, and 80.5% attend part-time. The student body represents the diversity of the region in which it is situated, and the district's mission includes goals that meet critical regional needs, including ending poverty in the San Antonio region through education.

Challenges and Goals

In the 2014–2015 academic year, the Alamo Colleges District (ACD) Board of Trustees issued a directive to investigate ways to decrease student cost with open access course materials. This spurred two initiatives by the district support office. The first, AlamoOPEN, is the district's zero cost initiative, in which course materials are in the form of free Open Educational Resources (OER), institutionally funded resources such as library databases and other free copyrighted works, including those created by faculty members. The second, branded Instructional Materials

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(IM) Direct, is the Inclusive Access solution, in which quality publisher-created materials are provided at a low cost through negotiated prices with leading publishers.

In addition to cutting the cost of textbooks, faculty welcomed these initiatives and recognized the academic value of having immediate first-day access to course materials. With all students accessing materials on the first day of class, students could not use the excuse of lack of access to shirk their course-related responsibilities. This also creates equity in the classroom and does not disadvantage those students who do not have the financial means to purchase course materials, sometimes for several weeks of the semester.

According to Dr. Said Fariabi, chair of the Mathematics, Engineering, Architecture, and Physics Departments at San Antonio College, students often did not have money to pay up front for course materials at the start of the semester. Faculty in his department recognized that if all students had first-day access to required course materials, they would have a better chance of being successful in the course.

Professor Renita Mitchell, chair of the mathematics department at St. Philip's College, explained that her department's concern driving IM Direct implementation revolved around student non-purchase of course materials after the 2-week free trial expired. Students who did not purchase the required course materials were negatively impacted and less likely to succeed in the course. With IM Direct, students would all be enrolled in the courseware during the first week of class, eliminating this barrier to student success.

Implementation

A key difference between the AlamoOPEN and IM Direct programs is the way in which individual courses are added to the programs. Individual faculty members can opt in to the AlamoOPEN program as they wish, whereas opting in to the IM Direct program is a department-wide decision. As a result, the impact on students via the IM Direct program is greater in magnitude. In addition, faculty members who opt in to the AlamoOPEN program are typically highly proactive, successful instructors, whereas the IM Direct program's faculty participants are more representative of the range of instructors in the district.

The AlamoOPEN and IM Direct programs are coordinated by the Office of the Vice Chancellor for Academic Success. Phillip Anaya is responsible for coordinating the programs. School administrators, including chairs and deans, receive guidelines each semester with an outline of events and deadlines for the IM Direct program. Each fall and spring semester, Anaya runs a trade show to help raise awareness of the AlamoOPEN and IM Direct programs at each school. Until 2019, these trade shows were hosted at each school in the district. In 2019, the trade show was hosted at one school and ran for a full day. The Follett bookstore that services

the district sent representatives, as did each publisher, and the IM Direct program was presented every hour to attendees.

When making the decision to transition to the IM Direct program for a specific course, discipline leads involve all faculty teaching that course in the decision. In high-enrollment courses with multiple sections, all the instructors that teach the course need to agree to implement IM Direct. In smaller courses taught by only one instructor, the decision is individual and does not require departmental consensus.

The IM Direct implementation process is highly automated at ACD, allowing for a scalable deployment. Once the decision is made for a course to join the IM Direct program, department chairs access the IM Direct Microsoft SharePoint site and begin the process by creating an account and providing term, school, course, publisher, and course material title information via a form. In addition, the chair includes notes to delineate whether all sections of the course are participating in the IM Direct program or if any section exceptions will be made. Exceptions to individual course sections are allowed if that section uses AlamoOPEN course materials or if the section is part of any of the high school programs at ACD. In that case, course materials are chosen and provided via the terms delineated in the Memorandum of Understanding or Course Agreement between the school district and ACD.

After the department chair has completed the form, the publisher reviews the adoption and provides updates as needed, including updating the ISBN for billing, recording the net price, and correcting the title, if necessary. The publisher representative can also enter additional information to note if a bundle will be used or if there are separate ISBNs for billing and deployment.

Next, the bookstore uses the net price to calculate the student fee and ensure that the billing ISBN is correctly entered. The bookstore representative can enter additional notes to document exceptions as well. Then, the information is passed to finance, where the data is entered into Banner, ACD's Student Information System (SIS), and tied to corresponding course section(s). The finance department ensures that all the details are correct and verify any special pricing before coding a fee in the SIS.

In general, the process is straightforward and nearly completely automated. Sometimes, when notes are entered, the process requires additional screening and custom actions to enable the course to transition properly to the IM Direct program. Deadlines are provided for each stakeholder that is involved in the process. The final step in the process, in which the student course fee associated with each IM Direct course is entered into Banner, is due several days before registration for the coming semester begins. This is in line with state laws that forbid institutions to make changes to tuition and fees once registration is open. Because of these deadlines, publishers have adequate time to set up course integrations as necessary to ensure a smooth implementation.

Once the bookstore receives information about courses participating in the IM Direct program, they set the final price for the student fee, according to the contract negotiated by Follett and the institution. The bookstore is responsible for delivering the e-texts via third-party integrations, such as VitalSource or RedShelf.

The third-party provider facilitates the integration of the course materials in Canvas, ACD's learning management system (LMS). If courseware is used, the publishers work with the departments and faculty to set up any necessary integrations and create courses. If a faculty member includes print or physical materials (such as a lab kit) in the required course materials, the bookstore stocks these items and tries to provide a discount on these items as well.

Course materials are used from a wide spectrum of publishers, with over 50% of courses participating in the IM Direct program using Pearson digital courseware or eBooks.

In the math department at St. Philip's college, most mathematics courses roll out master courses at the department level using Pearson software. During the summer, full-time faculty members set up master courses for each course. Then, Professor Mitchell pushes out the copied courses to individual instructors. This enables instructors to receive access to the courseware that contains a pre-built course before the start of the semester.

During the first two days of the semester, each course instructor brings his/her students to the computer lab for a 15-minute session. During that session, all the students log in to the digital courseware. Professor Mitchell makes sure to be on hand at the lab during the first week of class to troubleshoot any enrollment issues that arise. In this way, nearly all students access the course materials by the second day of the semester and can begin completing assignments.

Chair, Faculty, and Student Experience

Interestingly, many students believe that IM Direct course materials are free because it is included in the tuition and fees paid upon course registration. Because the course materials are not paid for separately, students are not as concerned about the cost.

Some students prefer a print copy of the textbook over an eBook. On rare occasions, students have expressed their preference for a new, hard-copy text over a loose-leaf addition. However, this complaint has been infrequent, and most students are satisfied with the digital materials and the loose-leaf print option.

Dr. Shane Kendell is the chair of the Department of Natural Sciences at St. Philip's College. His department has implemented IM Direct for nearly all courses in the department since 2015. For some military students who receive financial aid, the IM Direct program is especially helpful because they are eligible for tuition assistance but not textbook assistance. As a result, when the textbook fee is included in the tuition and fees for the course, their financial aid can cover the cost of the course materials. According to Dr. Kendell, other students also find that having the cost included in the course tuition and fees makes it easier to pay for the course materials.

Dr. Kendell explained that when students withdraw from a course that participates in the IM Direct program, they lose access to the course materials and may receive only a partial refund of the course according to the district's policy. In contrast, when a student drops a course that uses a course text purchased independently, the cost of the book is not regained, but the student retains the book and can use it in a subsequent semester if he/she re-enrolls in the course. Dr. Kendell noted that since the IM Direct course materials' fee is nominal, this has rarely been raised by students as an issue that needs to be addressed.

In the math department at San Antonio College, all courses except two participate in IM Direct. The department joined the program at the start in 2015 and services between five and six thousand students each semester. Dr. Fariabi noted that "faculty love it and have had a very good experience. The department has continued to add courses to the model over time because the faculty appreciates its benefits."

Professor Mitchell noted that instructors in the math department at St. Philip's College appreciate the IM Direct program and encouraged its expansion from a smaller pilot to full implementation across the department. As department chair, she works to handle all IM Direct-related tasks so that faculty are free to better support student learning. She appreciates the way IM Direct is run in the department and explained, "It really makes a difference how you set it up from the start. For our department, it is easier to front-load everything for faculty so that there is a smoother experience for faculty and for the department administration." Although the first couple of semesters, there was a heavier administrative burden associated with IM Direct, she has now perfected the workflow, and it only takes about two hours each semester to distribute courses, and time during the first week of the semester to help troubleshoot student enrollment issues.

Overcoming Obstacles

Although the deadlines are sometimes viewed as difficult by the various stakeholders, it is a necessary component of the process that enables it to run smoothly and efficiently. The first semester that the IM Direct program was rolled out, Anaya was more flexible, but realized that this caused many issues. Last-minute changes made by departments can cause much confusion and make the process more difficult for administration.

Sometimes, department chairs entered the wrong course number in the form. When that happened, the information supplied to Banner was incorrect, and the wrong students were billed for the IM Direct course fee. In these cases, the students were refunded, and the course that was supposed to join the IM Direct program could not do so for that semester because the course fee was not provided at the time of registration. In most of these cases, the publishers and bookstore were able to negotiate a better price for the course materials and mitigate the cost implications for students.

Anaya is the point of contact for the issues that crop up during the IM Direct implementation process. Sometimes, the Follett bookstore works with the publishers to iron out smaller issues, but Anaya is involved when the issue becomes bigger and helps coordinate and bring in the correct stakeholders to resolve difficulties as they arise.

Anaya explained that since the district needs to comply with legal policy and regulations, issues crop up with the inevitable errors that creep into a large implementation. After registration opens, the district cannot change student fees. If the wrong cost information is provided at any point during the process, the course cannot participate in the IM Direct program, and the institution needs to absorb the additional cost of the student texts for that course. Thankfully, most publishers have been able to meet the district in the middle to reduce the cost of the books outside the IM Direct program, which is helpful because the IM Direct program is intended to be a zero-cost initiative to the district. In addition to human error issues, Anaya pointed out that there needs to be more clarity regarding interpretation of federal guidelines and its alignment with state regulations that may be more stringent.

At the department level, the process is typically smooth. Dr. Fariabi noted that he finds courseware integration into Canvas a complication of the course creation process in MyLab Math. This is because he needs to copy and create new courses for instructors when the courseware is integrated in the LMS, and instructors have less freedom to create their own courses. In addition, not all instructors are familiar with Canvas, requiring additional training to help instructors use the LMS. As a result, starting in the Summer 2019 semester, the department is transitioning to using course access codes. Instructors will be provided access codes for MyLab Math at the start of the semester to distribute to their classes. In that way, each instructor will have more freedom to create courses in MyLab Math, and students will continue to receive first-day access to the courseware, now using the access codes.

Professor Mitchell noted that, from time to time, there is human error in transmission of enrollment data needed to batch-enroll students. To address this issue before the semester starts, a member of the department administration quickly checks the enrollments for each course after registration has taken place in the district to verify that the bookstore has correctly submitted student enrollment information to the publisher and that batch enrollment has completed successfully.

Laura Romero, executive director of Strategic Partnerships at Pearson, highlighted the importance of top-notch communication between the institution, the bookstore, and the publishers. Issues are bound to arise during implementation of an Inclusive Access program, and if all parties involved communicate quickly and effectively, they can usually be resolved. The process is different for faculty and students, and communicating these differences helps eliminate unnecessary confusion. According to Romero, Alamo has been a great communicative partner, which has facilitated the transition to IM Direct throughout the district.

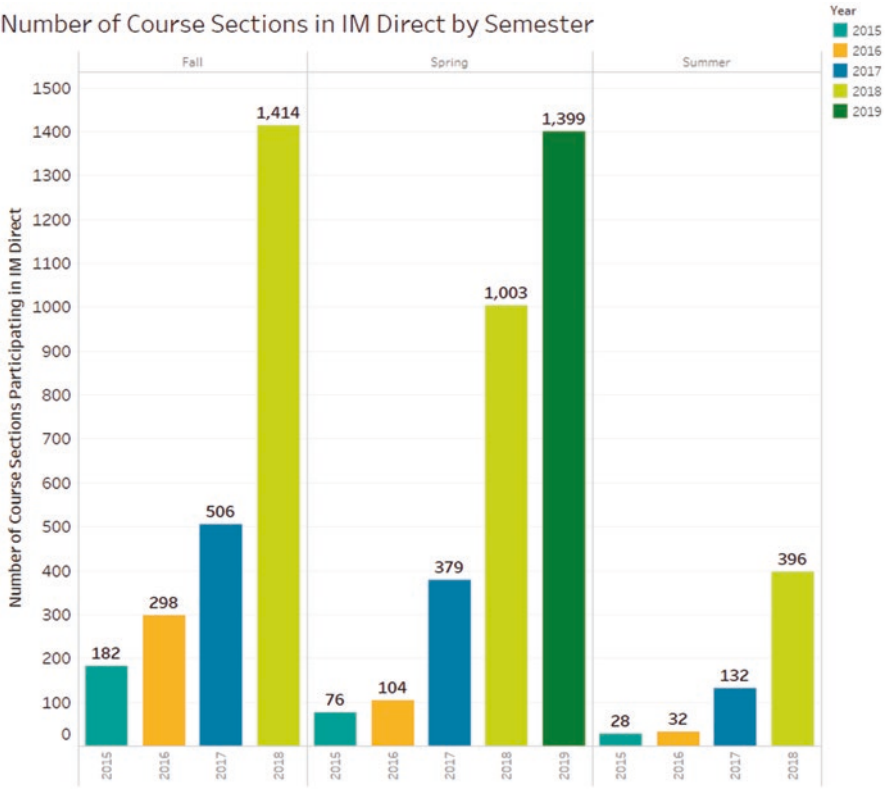

Fig. 5.1 Number of course sections participating in the IM Direct program at Alamo Colleges District by semester and year

Cost Savings

The IM Direct program saves students an average of $55 per textbook purchase compared with the original price of the textbook in the Follet bookstore that services the district. Over the lifetime of the AlamoOPEN and IM Direct program, students have saved an estimated $10 million, with nearly $7 million in savings attributed to the IM Direct program alone across nearly 6000 course sections (Figs. 5.1 and 5.2).

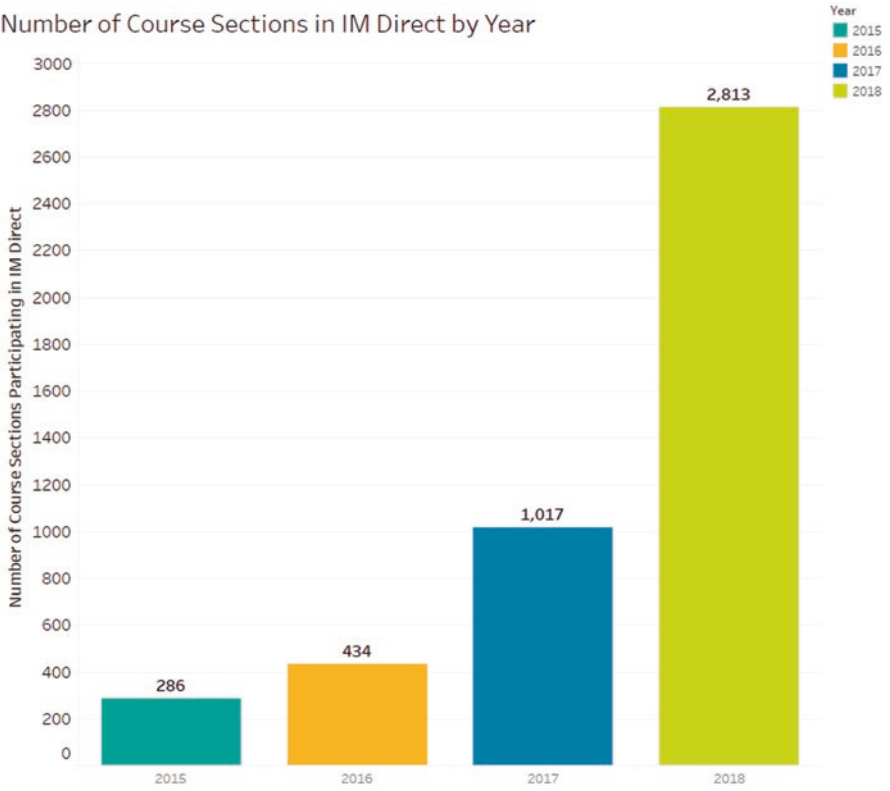

Fig. 5.2 Number of course sections participating in the IM Direct program at Alamo Colleges District by year

Conclusion

The IM Direct program at Alamo Colleges District is part of a larger initiative to provide less expensive course materials to students and enable them to succeed in their educational experience by enabling first-day access to course materials. The program is automated and scalable and has mushroomed since its inception in 2015.

Romero summarized:

> Alamo has been exceptionally successful at growing the IM Direct program. This is because the district has done a great job branding and promoting it as an affordability initiative. Because Phillip Anaya directs both the AlamoOPEN and IM Direct program, there is a central office that addresses affordability issues. Faculty have one address that they can direct all affordability questions and concerns, and Phillip can provide the options that are available via OER and Inclusive Access. If there are no OER options available for a given course, IM Direct can be offered as an alternative. With this more holistic approach to affordable course materials, Alamo has been highly successful in implementing and growing IM Direct across the district.(44)

Chapter 6
A Department-Wide Implementation of Inclusive Access

Traci Williams, Ed Nichols, Tina R. Cannon, Toni Fountain, Ashleigh Smith, and Dina Yankelewitz

Background

Chattanooga State Community College (CSCC) is a community college centered in Chattanooga, Tennessee. It serves a six-county area of Southeast Tennessee and several counties in neighboring north Georgia and Alabama. Founded in 1965, it is currently an open-entry institution that enrolls over 8000 students, with 49% of these students attending full-time and 58% female students. Eighty-nine percent of students are in-state, 66% are traditionally aged students, and 14% are enrolled exclusively in distance education courses. Seventy-eight percent of students are White, 10% are Black of African American, 6% are Hispanic or Latino, and 2% are Asian.

The college offers over 50 majors of study toward various associate degrees and certificates. The mathematics department offers two associate transfer degrees. In addition to providing Learning Support courses to help students transition to college-level courses, the math department services all students in the college with nine courses that qualify for the Tennessee General Education core curriculum mathematics requirement.

The Math Center at CSCC provides two core services to students. The first is tutoring, provided within the Open Lab portion of the Center. Any student enrolled in a math course at CSCC can visit the Open Lab and work on course assignments. At any point, students working in the Open Lab can request assistance from the

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rotating faculty and tutors that are on hand to provide guidance. The second function of the Center is to provide a forum for math assessment. All math exams are administered outside of lecture time, and students can come to the Math Center to take the exam any time before the due date set by the instructor. In this way, students do not have a time constraint when taking math tests at the college if they begin the exam with adequate time to spare before the exam's due date.

Challenges and Goals

The math department at Chattanooga State Community College has used digital course materials, homework assignments, and tests delivered through Pearson MyLab Math and MyLab Statistics for over a decade. These course materials are used consistently by all instructors throughout the department, except for MATH 2120, Differential Equations. On average, over 3000 students per semester are enrolled in courses using MyLab Math or MyLab Stats at CSCC (Fig. 6.1).

From the start, students purchase access codes to the course materials and thereby are able to access their course assignments. Because of the department's reliance on MyLab Math for student learning, practice, and assessment, it is critical that students have first-day access to course materials, and that ability to pay for course materials (or lack thereof) should not interfere with student access to critical materials necessary for success in their mathematics courses. As a result, the department sought a way to enable all students to obtain first-day access to course materials.

In addition to providing first-day access to course materials, the department was interested in the rich data reporting features that are available in MyLabsPlus. For example, the department is trying to use the data that can be mined from the

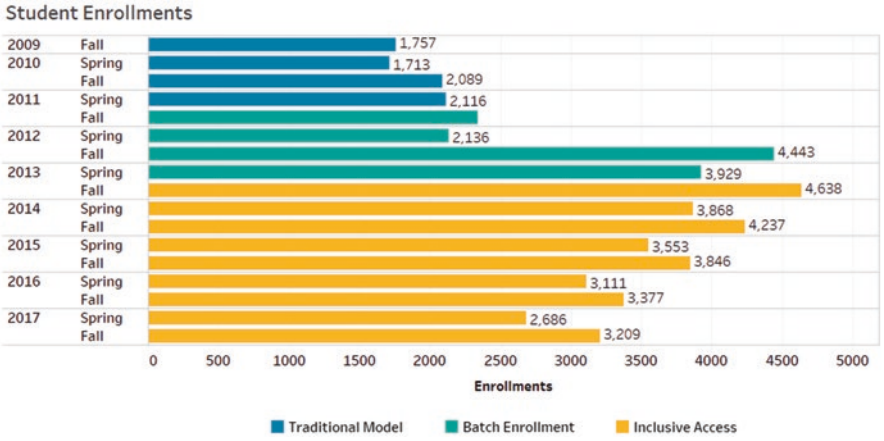

Fig. 6.1 Student enrollments in courses using MyLab *Math*, MyLab Stats, or MLP by semester and year in the CSCC math department

platform to understand whether early course assignment and exam grades can predict student outcomes and how to identify and understand the causes of student inactivity or non-engagement in a course.

In Fall 2011, the department moved from standard MyLab usage to MyLabsPlus (MLP), which allowed greater reporting capabilities, as well as the ability to batch-enroll students at the start of the course. Although this granted students first-day access to course materials, students still had the responsibility to pay the access fee. If they did not do so within the first 2 weeks of the course, they lost access to MyLabsPlus and only regained access after paying the fee.

To remove this additional barrier to student access, the department implemented an Inclusive Access model in Fall 2013. In this model, students are charged for MyLabsPlus immediately at the start of the semester as part of the course's tuition. In this model, all students can access and complete course assignments immediately and without interruption throughout the semester. In addition, students do not need to purchase and learn how to access the product individually. Rather, they are batch-enrolled and are able to access course materials during the first class session.

Benefits Observed

Ed Nichols, mathematics department head at CSCC, explained, "Inclusive Access has been good because the fees are paid up front and students have automatic access. Students don't have to worry about purchasing course materials and can hit the ground running."

Mathematics professors Toni Fountain and Dr. Tina Cannon pointed out, "In the past, many students did not buy the code immediately, and some could not do so because of financial aid constraints. In a math course, a week and a half or two weeks late is too late. With Inclusive Access, students can start on Day 1 and everyone is on the same page. As instructors, we can start teaching on the first day and can take one time in class to show them how to log in to MyLabsPlus, we don't have to repeat it over and over as we used to before we implemented Inclusive Access."

Ashleigh Smith, a mathematics instructor in the department, was the Math Center coordinator for 5 years since September 2013. She noted, "The biggest difference is that registered students don't have to go around and figure out what they need to buy or how to get an access code. The process is more streamlined, specifically in the Math Center. There aren't many students coming that think they are ready to start only to find out that there is work still to be done in procuring the course materials. Instead, they register for the class and are ready to begin working on assignments right away."

Fountain and Cannon have found that with Inclusive Access, students cannot use the excuse that they haven't been able to purchase the text as a reason for not completing coursework. With no easy excuse, they are more likely to access the materials and complete their assignments (Table 6.1).

Table 6.1 Name and title references

Name	Position
Dr. Tina Cannon	Professor of Mathematics
Toni Fountain	Associate Professor of Mathematics
Ed Nichols	Mathematics Department Head
Ashleigh Smith	Instructor of Mathematics and former Math Center Coordinator

Implementation

At Chattanooga State, the Math Center is the local hub for all matters related to MyLabsPlus (MLP). The coordinator and manager of the lab are responsible for setting up courses in MLP. They copy old courses, create new courses, and run batch enrollment to grant students registered for math courses access to MLP. They ensure that batch enrollment is running each day to enroll and unenroll students that add or drop a course during the late registration window at the start of the semester.

In addition, the Math Center staff are the central points of contact for MLP tech support. Math Center staff have admin access to all the MLP courses at CSCC. In this way, they can quickly access and investigate any course-related issues. They can also check if students are properly registered for courses and why they may not be granted access due to a course enrollment issue.

Any instructor or student that requires support with MLP first turns to the Math Center staff to find out if they can troubleshoot the issue or problem-solve locally. If they cannot solve the issue without involving Pearson, the Math Center staff will reach out to Pearson tech support.

Smith stated, “Having a person in charge of all things MLP is very important. The math department at CSCC wouldn’t work the way it does if it didn’t have that function.” She explained that as a faculty member, she does not have to halt her lecture if there is a student that cannot access MLP on the first day of the course. Instead, she sends the student over the Math Center across the hall, where the issues are usually solved quickly and painlessly. The Math Center staff can access student registration information and verify that the student has indeed registered for the course. Once this is completed, the Math Center staff can enroll the student in the digital courseware. In contrast, faculty members often don’t have all the tools necessary to solve student access issues. With the Math Center staff on call to fulfill this role, faculty are not burdened with the additional pressure to ensure student access as they try to help their students learn content.

With one central location for all MLP tech issues in the department, error reporting to Pearson technical support is also more accurate and streamlined. Faculty members don’t need to identify the correct Pearson tech support to contact for support. The Math Center staff work as liaisons between the departments at Pearson. In this way, issues are properly escalated. Because technical issues are not isolated, and trends or recurring problems are more quickly identified, more global solutions can be implemented to meet these challenges.

Smith also explained that having built-in MLP expertise helps faculty in other ways as well. Because the Math Center staff are so familiar with MLP and have experience helping faculty implement various strategies and learning tools within MLP, faculty members often approach the Math Center staff for guidance on making improvements, changes, or additions to their courses. In this way, the Math Center shares knowledge and provides professional development and guidance on MLP-related course development and revision.

Overcoming Hurdles

According to Cannon and Fountain, students sometimes encounter enrollment issues if they do not register before the first day of class. In those cases, there is a one-day lag in the batch enrollment for MLP, causing students temporary lack of access to course materials. In Fall 2018, the college changed the registration policy, and no late registration is allowed. Under the new policy, fewer students are anticipated to have these enrollment issues.

Other issues sometimes arise that result in student inability to access the course materials. These include registration issues or specific issues that prevent them from being included in the batch enrollment system. For example, students can be dropped from a course for nonpayment and then re-enroll in the course. In these cases the batch enrollment system, which occurs daily, may not be updated immediately with the student enrollment. In addition, there can be technical issues that prevent registration data from being accurately provided for batch enrollment to complete successfully. The enrollment data has improved over time, leading to fewer reporting and batch enrollment issues.

In such cases, the Math Center experienced higher than usual volume of students arriving to troubleshoot access issues during the first week of class. Thankfully, the center was usually able to successfully enroll students in the courseware.

In addition to periodic enrollment issues, faculty noted that coordinator courses for MLP need to be created well in advance so that they can be copied for individual sections before the start of the semester. Because all courses are copied from coordinator courses, individual instructors have less control over the structure of their course. This deadline is a hurdle that the lead instructor for each course faces. In addition, the math department uses MLP gradebook rather than their learning management system (LMS), D2L, because of integration and sync issues that they experienced when using MLP. Pearson is exploring other ways to integrate MyLab Math with CSCC's learning management system D2L to mitigate both issues for Fall 2020.

Cost Savings

Through the Inclusive Access program, MyLabsPlus was discounted $50 off the list price at CSCC. Until Spring 2019, students paid $65 per subscription to MLP. This was part of the contract that has been negotiated by the Tennessee Board of Regents

(TBR) and is consistent across all Tennessee community colleges that take advantage of the contract negotiated between Pearson and TBR. The department has enrolled 30,267 students in courses using MLP since Fall 2013. This translates to over $2 million in savings between Fall 2013 and Spring 2019 in its fall and spring classes alone.

Nichols noted that students and even newer faculty members take Inclusive Access for granted at Chattanooga State because it has been in place in the math department for so long. In general, students do not question the fee or complain that the course fee is too high. Many students receive financial aid, and this is one of the fees that is covered by the aid that they receive. Faculty members that have joined the department after Inclusive Access was implemented enter their classes on the first day assuming that students have access to the course materials.

Cannon and Fountain explained, "When the cost of MLP is part of the course fees it helps a lot because students don't have to think about coming up with money for a book. Students consider the cost part of their tuition, rather than a separate cost and something additional that they need to pay for. Before Inclusive Access, students were able to make a choice not to purchase [the book]. When they did that, they wasted the money they paid to take the class because they failed the course and needed to retake it. This non-purchase has a much larger financial implication than the cost of the code, because it snowballs into something much bigger."

Conclusion

Inclusive Access in the Chattanooga State Community College mathematics department has met its goals of providing low-cost digital course materials to students on the first day of class. Students are granted access to the e-text, assignments, and assessments via a course fee that is assessed when students register for the course. The department leverages its Math Center to ensure that any issues that arise with enrollment or student access are resolved quickly and with minimal faculty involvement. This has streamlined the Inclusive Access program at CSCC and enables faculty and students to benefit from the digital courseware immediately at the start of the semester.

Chapter 7
Implementing Inclusive Access: Considerations, Obstacles, and Pathways to Improving Student Resource Distribution in an Online Environment

Lindsay A. Conole, Tracey Osborne, Mary Higgins, and Tim Kerber

Background

At Southern New Hampshire University (SNHU), our Global Campus students complete traditional paced online courses, non-paced competency-based courses that are also offered in the online environment, as well as hybrid courses that combine both online and in-person offerings. Our online academic programs, courses, and competencies are developed and maintained by our internal Academics team, facilitated by adjunct instructors, and delivered to more than 100,000 online students located across the United States and internationally. Our Academic Resources team partners with major educational publishers to assess, incorporate, and support the digital learning resources, including courseware and eTexts, which are embedded within our online courses and competencies.

Traditionally, SNHU online students pay course tuition and separately purchase access to course learning resources from the virtual bookstore, often by using financial aid vouchers created using their excess funds for a given term. Students then receive either the physical materials they purchased or an access code and login instructions for each digital resource needed for their studies and assignments. Current course resource costs limit the selection of multiple resources within courses, which could be prohibitively expensive. It has long been a goal of the Academic Resources department to ensure the affordability of the resources for a given course, striving to keep those costs below $100 total.

Through internal data collection, we found that approximately 20% of our students delay purchasing their required resources until past day one of the term. This causes course instructors to attempt to teach the course to students who are not yet fully equipped to learn. Advisors spend time helping students who have not yet

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accessed their resources, while staff in the Student Financial Services department respond to voucher questions and issues. Help Desk and Academic Resources staff spend inordinate amounts of time troubleshooting course resource access issues. Data collected shows that approximately 30% of all troubleshooting during a term is related to access codes and resource registration access. Additionally, with sell-through rates in the digital bookstore varying between 40% and 90%, depending on the materials, there is not a sound or consistent method for determining whether students had access to or were utilizing their course materials.

Beginning in 2017, our Academic Resources team set out to improve our students' experience in accessing their digital resources. Our investigation was part of a larger course content strategy designed to ensure our online courses offer high-quality, affordable, and accessible content. The intent was first and foremost to significantly improve students' learning experiences, but also to relieve hundreds of hours of internal support by allowing for automatic, codeless access within our online courses. This distribution model, which does not require students to directly or manually purchase their own course materials from the bookstore, but rather includes this charge alongside their tuition payments, is widely known in the higher education industry as inclusive access.

Research

Core team members from Academic Resources leadership began with an initial scan and review of the many articles available on inclusive access. In order to ensure a comprehensive knowledge base, we also conducted searches of topics such as eText initiatives, day one access, direct digital access, and course material fees. Our intent was to better understand the approaches used by other universities and their lessons learned, so we also reviewed the inclusive access information posted on comparable university's websites. In addition, we met with multiple publishers and service providers to view demonstrations of their solutions and understand the advantages and drawbacks. Ultimately, the most enlightening method for research was interviewing multiple universities with inclusive access programs and gaining insight into their perspectives and experiences.

Industry Trends

From this research we were able to identify several trends in the industry and among our peers. By and large, inclusive access programs are getting their start on ground-based campuses with traditional faculty models and not in online, centrally designed models. In these instances, faculty determine whether they want to adopt the model for their specific offering of a course, rather than inclusive access being widespread and compulsory like we were planning for SNHU. Additionally, we saw many

schools have fees that vary by course and were more in line with the actual cost of the materials, rather than a flat fee. Where there was a flat fee, it was frequently rolled into tuition costs and not a separate line item charge. Lastly, we found that many schools were not yet implementing inclusive access at the scale that we were envisioning.

In addition to the trends we uncovered through the interviews, we also identified some trends within the higher education industry regarding the federal regulations governing inclusive access. These included some instances in which inclusive access was coming under fire for perceived errors and oversights in the implementation process as it related to these federal regulations. Because of the resulting backlash and negativity then surrounding inclusive access at a few of these institutions, ultimately their endeavors were seriously curtailed by the need to mitigate the issues. Needless to say, these examples were never far from our minds when devising our own strategy. We took care to consider these instances when planning our own pilot, to avoid these miscalculations whenever possible.

Planning

All successful projects, once initiated and defined, begin with an extensive planning period during which the project team is assembled and the various stages, tasks, deliverables, milestones, timelines, and resources are determined. Ours was no different. With an effective and thorough planning process, the execution of a project is much more likely to be successful. Therefore we strived to ensure we used our planning time as meticulously as possible.

Kickoff: The Sticky Note Session

After exhaustive research, the core team collectively felt we were ready to form a cohesive project proposal to present to our project governance team. We identified the major considerations for this initiative including our internal stakeholders, bookstore and publisher partnerships, financial aspects, systems integration aspects, implementation considerations, and possible approaches. This was accomplished in multiple sessions that eventually formed a high level work breakdown structure to guide our next steps. We utilized a methodology of brainstorming using sticky notes, with each note containing a word, phrase, or question from the core members of the project team. This was an intentional stream-of-consciousness approach designed to document as much as possible for consideration (see Fig. 7.1).

Through this activity we generated hundreds of ideas and impacts, which we then condensed into multiple questions including:

- How would this specifically impact our students, internal support teams, bookstore, and publishers?

- Should we pursue a separate student resource fee or include a resource cost within tuition?
- How would our publishers account for and invoice us for student access to resources?
- Are there any special considerations for certain students, including military students?
- What materials would be covered?
- What programs or courses should be included or excluded, if any?
- How can we mitigate and communicate this change?

These categorical considerations eventually transformed into the main classifications for the planning of this project, which could be most simply broken down by the basics: *who, what, when,* and *how?*

WHO

An important takeaway from the initial kickoff meeting was the need to identify the major stakeholders and start involving them in the pilot planning and implementation process as soon as possible. Each affected department designated representatives who joined the core team to form the larger project team. We also needed to look outside of the university at our external partners, both for supply of the content itself and for assistance with billing and distribution.

Internal Stakeholders

From the beginning of our planning phase, we knew that multiple departments and functions would be impacted by the transition from student purchase of course materials to an inclusive access model. During our research phase, we heard from other institutions that getting early buy-in from other departments and faculty was a key step for a successful implementation.

The core team started by brainstorming who we thought should be involved with setting up a small inclusive access pilot. Some examples from the resulting list included:

Academic Advising
Academic Technology
ITS and Student-Facing Technology
Staff and Faculty Training
Finance
Student Financial Services
Communications (student and internal facing)

Marketing
Data Collection
Course Scheduling
Registrar Office

We knew that we were far from experts in every facet of our business. With our cursory knowledge, we could make assumptions about where there would be impact, but only those from within a department can truly speak to the extent of impact a given project will have. We reached out to these departments and asked for representatives to join us as planning team members and help us proactively plan for barriers, issues, and hidden process steps that could derail our project early on. We were fortunate to man our team with these experts from around the university and to gain their valuable insights throughout the duration of the project, pilot, and beyond.

External Stakeholders

We also needed to consider our external stakeholders, starting with our primary and most important one: our students. While we counted on our academic advisors to represent our student needs throughout the planning and implementation stages, we also designed student-facing surveys to collect direct feedback. In addition, we relied on the responses and data collected from past student satisfaction and course evaluation surveys to contribute to this knowledge base. Student success and student user experience were consistently at the forefront of our planning sessions and decision-making.

The other external stakeholder groups were our third-party resource vendors and online bookstore. Overall, our main approach was to establish which of our current partners could support the model with the least amount of disruption to current workflows. Fortunately, we have existing relationships with distributors, publishers, and courseware providers that we built upon for this new endeavor. These relationships allow us to explore new contract or billing models that would target lowering costs as we continue to adopt materials in the inclusive access model. One of these long-standing courseware partners was able to meet our standards for involvement, and therefore we felt confident collaborating with them for this pilot.

In addition to courseware, we also wanted the pilot to include a course utilizing a digital eText. Given that eTexts are currently embedded in our online bookstore relationship, and our online bookstore has been a long-standing partner of ours who was willing to assist us with this program and distribution in accordance with our terms, again we felt confident moving a pilot forward with them. Moreover, our students were familiar with the bookstore and eText platform, having used them for years. To anchor this pilot to a company with which our students already felt comfortable was another critical factor in determining these external partners.

What

Once we had a larger internal project team in place, and our external partners identified, we set about the task of determining which courses and content would be included in this pilot. It was critical to consider several factors when selecting which courses could and should be piloted and the specific content for the pilot.

Course and Content Considerations

Several topics and questions were circulated with the project team during this analysis. While the Academic Resources team had the majority of insight into the minutiae of the resource offerings within SNHU's catalog, it was still important to ensure we had the buy-in and support of the larger project team on the course and content selection. Specifically the following considerations were observed and conclusions drawn (see Table 7.1).

The factors listed, as well as how each impacted the other, were critical to the selection process for determining which courses and subsequently determining the content that would be included in the pilot. Analysis and incorporation of our external vendor partners, as indicated above, was also interwoven into these decisions. This process would be augmented and repeated through the duration of subsequent pilots, as well as the planning of larger-scale rollouts.

When

With the courses selected and stakeholders onboarded, the time came to determine when we could conceivably implement this pilot. Several factors determined how quickly we could get a pilot off the ground, including feedback from our initial research, the capacity of our registrar and scheduling teams, our technology governance process, and the timing of our courses being built and made available within the Learning Management System (LMS) in relation to a given term start.

Feedback on Timing from Initial Research

One thing we heard over and over from our earlier research was that many of the universities we spoke with tended to start small and ultimately take up to 3 years to roll their programs out effectively. When they failed to do so, it caused more confusion and complications down the line. For an initial pilot and launch, the average time quoted was approximately 1 year, though some smaller more agile universities were able to do this in much less time. Similar factors to our own, such as governance and internal university regulations and guidelines, were often cited as an

influence on this timeline. However, many universities we spoke with were operating on a more traditional academic schedule, with longer term lengths than our own, as well as not offering as many classes over the summer months. Given that SNHU offers shorter 8-week terms and operates year round, we knew we needed to account for this term duration and frequency in our pilot implementation timeline.

Internal Processes and Timing

One of the most impactful internal processes that affected our timeline for the pilot was the procedures for the governance of our technology and systems. Our Academic Technology team, in conjunction with the Information Technology Services team, oversees the process of integrating new technologies or adding functionalities to existing technologies. This involves installation of a product on both testing and live production servers, as well as a thorough auditing, analysis, and review process that provides an overview of what the teams encountered during this procedure. If a product clears the various standards in place, the green light is given to begin using that product in a student-facing capacity. Because of the intricacy of this governance process, as well as the backlog of items already in queue for other university projects and initiatives, several months were added to the proposed pilot timeline.

Our course scheduling process presented another challenge to the timeline. In order to ensure students could preregister for courses, the Student Information System (SIS) the team uses to create and populate the course sections requires that the sections be built at least four terms in advance. Adding to this challenge was the fact that changes could not be made retroactively; the sections needed to be completely rebuilt in order for any changes to take effect. The addition of a resource fee to the course constituted one such change. We would need to ensure that we alerted the scheduling team to our decisions with enough time for them to implement the changes in the system without needing to rebuild the sections.

Lastly, another hindrance to our overall timeline was the schedule for making alterations to courses within the LMS. In order to have courses finalized and available for faculty and students, changes need to be submitted up to 12 weeks prior to a term start. This ensures they are properly formatted with any updates to content, documents, or integrated tools in time for the course's public-facing release. For our inclusive access pilot, we knew we would need to submit alterations to the course content or layout within this timeline.

Timeline

We found that the most effective method for establishing our timeline was to first select an upcoming term. From there we worked backward from the start date of that term, layering in these conjunctive schedules. Our result is presented the timeline below (see Fig. 7.2).

How

As is the case with most projects, the "how" of inclusive access was where we spent the majority of our time and resources during our planning stage. Untangling the complexities of determining the pilot success criteria and goals, incorporating federal regulations and financial aid considerations, adding a resource fee to existing courses, identifying technological needs, and communicating with stakeholders would become the bulk of the work we spent the next few months completing.

Pilot Goals and Metrics for Success

Determining success criteria and metrics for the inclusive access pilot was an important step that we took with our project team early on. This would prove to be vital for measuring the effectiveness of each pilot and for getting approval from leadership at each milestone. We found that our success criteria were well aligned with the success criteria for our academic programs as a whole. The metrics also included some criteria specific to students' direct access to their digital course materials, with most of them being quantitative and dependent on data collection capabilities (see Tables 7.2 and 7.3).

Though it was not the intent of the pilot to immediately produce positive gains in all of these areas, we knew that we could likely move the dial on a few key metrics that could be used to validate our case for the expansion of the program to all courses with digital products in use. Through conversations with various partners, publishers, and other universities, we anticipated where we could expect to see the most significant data trends: decreases in term-start service requests, earlier resource access dates, and increases in overall engagement with resources. In short, we hoped to see students opening their course materials earlier, with fewer issues in gaining access, and therefore ultimately using their resources more than they had in previous terms.

These metrics also kept alignment with our overall project goals, with each metric supporting one or more goals. Our project charter states our objective is to roll out inclusive access within our courses that use digital content in order to do the following:

- Provide students with increased efficiency and an improved experience by ensuring all learning resources are accessible upon entering a course.
- Increase the likelihood of students' success by reducing barriers to resources.
- Improve instructor effectiveness and satisfaction by ensuring all students have access to same learning resources from the start of course.
- Reduce administrative and cross-departmental burden of troubleshooting access, instructions, and codes.

Federal Regulation

As affordability has become a cumulative target of the national conversation in higher education, federal regulations for inclusive access or flat-fee resource programs have recently been developed (see Fig. 7.3).

Through our research of cases and reports both from and about higher education institutions, we were aware of several instances in which colleges and universities faced issues with compliance with this regulation. Because the model of inclusive access is fairly new to higher education, and the regulation was first drafted in 2016, it is expected that the higher education community will experience growing pains with the interpretation and application of this regulation.

For our purposes, we were able to leverage our established relationships with publishers and courseware providers to build on our existing set prices for digital packages. As these are customized to our student population, lower than national retail price, and only available through our distribution channels, our publisher courseware does not require the ability for students to opt out of the program. For our eTexts, students are opted in by default but have the first 2 weeks of the term—the standard amount of time students have to decide to drop or withdraw from a course at SNHU—to opt out of the program. As our inclusive access fee is billed with tuition at the conclusion of those 2 weeks, an automated refund of the resource fee and a reimbursement to the student's tuition balance are provided if they choose to opt out.

Financial

As indicated, the cost of the resources was taken into account when determining which content to include in the pilot. It was important for us to create a financially viable model from the start to ensure that we could feasibly expand. We knew, at least for pilot purposes, we would have little to no budget available to contribute to this project, so we purposefully chose our courses accordingly. Additionally, we had to consider how to set up a course fee that would automatically be applied to a student's tuition bill based on their enrollment and how to augment that fee in the case that the student chose to opt out.

Course Resource Fee The current state cost and payment of these resources were important considerations, as was the fact that SNHU's online programs and strategy are increasingly exploring blend of three credit courses along with single credit competencies. Ultimately, we decided on a flat fee per credit for our inclusive access pilot, with each credit carrying a fee of $20. A flat fee supports the financial aid process for a traditional course model and allows for the flexibility to be used across multiple durations and levels of learning experiences that we may add to our catalogs in the future. The $20 flat fee per credit equates to the flat fee of $60 for each inclusive access traditional three-credit course and its associated materials.

Landing on this figure took several factors into account. The cost aligned with the average cost of used textbooks across our courses and was also divisible cleanly by three, the standard number of credits (and therefore competencies) covered in a single course. This allows us to potentially charge $20 per credit if needed. This fee was automatically charged upon enrolling a student in the course, using our SIS. Courses selected for inclusive access were configured in that system to include a fee as part of the charges incurred from a registration, in the same way as tuition. Additionally, because of this configuration and the fee being considered part of the materials designation, the student's available financial aid could be automatically applied, eliminating the need for a financial aid voucher to be issued.

Technology Needs

In addition to assessing the financial, content, and regulatory considerations, we also needed to evaluate how we could incorporate inclusive access into our technology landscape. The factors we examined were the current state technology and its capabilities, what new technologies needed to be added to our systems, and the lift needed to implement any new technologies into our existing systems.

The integration of the needed technology represented one of the most successful aspects of the project, but also one of the most challenging and complex. While pilot courses utilizing preexisting LMS integrations of courseware did not require any technological uplift, a new LMS integration needed to be established that would allow for direct access to the eText resources from our bookstore partner. To be considered inclusive access, the technology housing the resources needed to be accessible directly within the associated course, without being prompted for registration or payment while also still allowing students to opt out of the resource should they choose to do so. Ultimately, after effectively navigating these intricacies, a new learning tool integration (LTI) was set up within our LMS that successfully linked the eText platform directly within the courses in which they were required.

Training and Communication

Communications regarding the project and pilot began with a formal project business case proposal to our academic senior leadership to initiate a cross-functional implementation team. Much of the early communication thereafter was facilitated through project team planning meetings and follow-up status reports. During the heaviest planning states of the project, the core team met twice weekly to discuss obstacles, achievements, and progress on the project plan, while the larger project team met weekly to discuss relevant topics of impact at the time.

Specific communication plans were then developed for the non-project team members of Admissions, Financial Services, Advising, Adjunct Faculty, Help Desk, and Academics. These plans detailed the goals and intentions of the program, as well as the changes made to the courses in question. They also included opportuni-

ties for the project team to host demonstrations of the student experience, training on how to utilize any new technologies, and "brown bag" informational sessions during which any questions or clarifications could be addressed by the project team. Additionally, we presented the pilot plan at a department-wide academic meeting. An interactive poster session at that meeting provided an opportunity to connect with over 200 employees about the initiative, build excitement about inclusive access, and gain support and feedback for our model.

Student-facing communication was also developed at this time which included scheduled, customized emails and website FAQs, as well as augmentation to the directives within the course in the LMS intended to help guide the students on how to access their resources under this new model. Our FAQs mimicked those we saw during our research phase and included some questions tailored specifically for the SNHU student experience. We also established a generalized email address which was included on all communications with encouragement to both students and internal teams to utilize it for any and all questions related to the program.

The Pilot

After all the careful and meticulous planning, our work was hardly over; we had yet to face the many obstacles we would see during our pilot phase. However, the weeks of preparation and anticipation of outcomes leading up to the pilot release and our dedicated project team prepared us to tackle the obstacles we faced. The pilot launched in October of 2018 with two courses, and approximately 100 students enrolled across both courses. In subsequent pilot terms in early 2019, the team added five additional courses and a population of approximately 1000 students per term. After retrospective and reflection on these pilots, we emerged with lessons learned and a path forward.

Obstacles

Some of the more significant obstacles we encountered were the level of automation we could achieve, coordination with our third-party partners, and accommodation of our military student population. As of this publication, these are areas we are still working to improve. We will likely need to continually monitor and amend these processes for the duration of the rollout and beyond, as inclusive access becomes operationalized.

Increasing efficiency and upgrading technology are across-the-board initiatives at SNHU. After having recently completed a transition to a new LMS, we have worked to upgrade our other systems such as our SIS and student web portal. As such, there was and remains hesitation around the incorporation of automation into our current SIS. As a result, adding or subtracting charges to a student account

based on opt-in or opt-out behavior is currently a manual process. Automations would allow for the possibility of ingesting data files each day to perform this function. Continued delays in the opt-out fee automation will likely result in delays in the transition of courses using materials that students can opt out of. It is our hope that we can mitigate this obstacle through increased advocacy for the impact this automation would have on the viability and growth of the program or through potential alternative means of adjusting these charges within the systems.

Third-party partnerships are another area in which we are continually looking for improvements to efficiency and therefore raising our expectations of those partners. Starting during the planning stages, and continuing through the pilot, we faced difficulty with coordinating and executing the workflow between ourselves and our bookstore partner, neither of us having a wealth of experience with development of inclusive access programs. This created obstacles resulting from miscommunication, misunderstandings, and delays in delivery of technology needs. Ultimately, this led to errors in the student and faculty experience. While these errors were minor and corrected after they were discovered, they were nevertheless a significant impact to our momentum and trajectory.

Lastly, we faced obstacles in how the inclusive access model could best be facilitated to serve our large military population. Part of our mission at SNHU is to make education a more attainable reality for traditionally underserved populations. Therefore, we take great pride in our ability to provide world-class support to our active military students, who comprise almost 20% of our total student enrollments. A facet of this support is providing assistance with the military benefits for covering both tuition and materials costs. In working closely with the military benefits team, we came to understand the specific requirements needed to get materials covered under some of these benefits programs. These included exact descriptions of the materials, the courses for which they were being used, and the costs of those materials. Initially, we assumed the charge on the student's account would suffice for all military reimbursements; however, we came to realize we would need to provide itemized receipts that listed the exact inclusive access charge and what resources were being provided for that charge. In partnering with our bookstore, we were able to get those receipts created and distributed to all students in inclusive access courses, not just those in our military population.

Lessons Learned and Takeaways

The purpose of a pilot is to have the opportunity to gather data and make adjustments based on those observations, and the inclusive access pilot at SNHU was no different. There were several valuable lessons learned throughout the discovery and pilot phases, specifically related to pre-project research and the success metrics and data collection methods.

Research and Discovery

During discovery we learned to ensure we were asking the right questions to similar universities that would have the most bearing and impact on our decision-making for our specific learning environment and student population. Because so many inclusive access programs start on ground-based campuses, we quickly learned to tailor any advice given from those universities to what it would translate to in the online context. We knew that anything we did would have to be applicable to all sections of a given course and that we would have less flexibility in terms of the degree of freedom and choice our faculty and students would have. We also needed a high degree of thoughtfulness when it came to how we would communicate this change with those populations.

One of the key differences and takeaways we had from the early research days was that, while we saw most if not all schools were implementing a fee that varied from course to course based on the actual cost of the resource, this model of distribution was neither sustainable nor applicable to the SNHU online environment. Firstly, one of our main goals was to eliminate the term-start anxiety for students, not just as it related to the process of accessing the resource, but also of not knowing what the resource would cost until visiting the bookstore. If the fee remained variable from course to course, we would not have been able to make any gains in this area. Also, given the aforementioned desire to eventually marry this model with the potential disaggregation of credits within a given course, we knew a varying fee would not be prudent. Therefore, one of our main goals from the start was to have a flat fee for the materials in our inclusive access program.

Metrics and Data Collection

Midway into our first pilot term, we realized our approaches to data collection could have been executed differently. First, we realized that until we were able to have inclusive access running for successive terms, we would not be able to accurately measure key success metrics such as the on-time submission rates, improved grades, and lower course drop rates. Therefore, we shifted our focus to highlight the metrics that could be specifically attributed to inclusive access. These included earlier resource access rates, increased engagement with the materials, decreased opt-out rates, and reduction of service requests and calls to financial services related to the course fee. These were significant criteria that could show enough gains in student success and efficiency in operations that we could make a case for larger and more successive pilots.

Second, we realized that reviewing these success criteria with internal data analysts early on would have helped us plan our pilots more effectively. Getting data analytic partners to help determine what would be measurable and setting up a more formal control study, if possible, would have brought more credibility to our results. We also learned that until we roll out to a larger population, the data we collect will be slightly skewed due to restricted sample sizes. While we were able to bring these

teams in to help us plan the larger rollouts of inclusive access, having them at the table with us during the brainstorming stage would have provided us with greater clarity on what we wanted to measure and what we could measure.

Pilot Expansion

Despite the obstacles encountered, the results of the initial pilot were overwhelmingly successful. We observed a dramatic reduction in term-start troubleshooting related to resource access and registration, as well as increases in engagement with the resource and course overall. Most importantly our students, faculty, academic advisors, and other student support groups reported high levels of satisfaction with the program and a desire to expand it to more courses in the near future.

Given these results, we decided to offer an expanded pilot in Spring 2019, which would include more courses with eTexts of varying retail pricings, as well as incorporate resources from additional courseware partners. The hope is that we will see the effects the varying price points have on the opt-out percentages, given that we kept our fee stable at $60. We also hope to make key observations and ultimately decisions related to the scalability of our internal processes for payments, communication, and billing coordination with third-party vendors. Lastly, we introduced a few new components to the courses, based on feedback from the initial pilot, including the distribution of itemized receipts to students who remained opted in and enrolled past the census date, as well as more explicit instructions within the courses on accessing the resources through inclusive access. These minor adjustments speak to the nature of this initiative in that the process is and will always be iterative and continuously improving, as is the case with any university initiative.

What the Future Holds

The success of the first pilot and expansion also began an earnest and practical discussion of how we could roll out inclusive access on a larger scale across the university, as well as begin to incorporate the model into any newly developed courses and programs. A governance committee will ultimately review our metrics and financial analysis for future plans and provide approval for expansion to as many courses as possible. However, much still remains to be seen.

Additional research into partnerships that can accommodate our needs for eText distribution and billing must be completed, as well as renegotiation of our business relationship with our current bookstore partner. Also, upcoming pricing negotiations with our publishing and courseware partners will have a significant impact on our financial models and ultimately determine whether a $60 fee is sustainable. Furthermore, our pilot consisted of only undergraduate courses, but we are not discounting that we will also need to consider how we will incorporate graduate

courses in to this model. Lastly, because of the unknowns still surrounding the automation of the opt-out reporting, the initial rollout effort may be limited to courses which do not allow for a student to opt out, in accordance with the federal regulation. Essentially, our initial rollout could be limited to courses containing custom courseware or resources negotiated at custom pricing lower than the market rate. It is our hope, however, that once we become more stabilized on the unknowns we can incorporate as much as 85–90% of our current graduate and undergraduate course catalogs to the inclusive access model by Fall 2020.

Appendix: Figures and Tables

Inclusive Access eText Initiative
Spectacle Island Rm. 11/27/17
Mary, Tracey, Lindsay, Tim

Goal: Research and recommend strategy to embed student access to LR's within course/experience in place of separate fees payment, access codes and software downloads.

1st Draft

Stakeholders	Vendor/ Partners	Financials	Approach/ Content	Integration Technology	Implementation Considerations	Project Planning	Timeline Approach	Long Term Goals
Who?	Who?	How?	What?	How?	How?	How?	When?	Why?
Primary input from other depts.. Advising input Academic Deans Admissions COLT Accounting & Finance Student FA Services Data Team MSR Library Services ITS Academic Tech Learning Science & Assessment OAC Procurement **Secondary** Workforce CETA Univ College Academic Scheduling Dispute Resolution Sandbox	Bookstore impact MBS Role Clarity MBS Negotiations Critical uptime assurance Vendor relationship transitions Vendor partnering deliverables Contract renegotiations/ pricing	Fin Aid implication/ Distribution / Procurement Physical & Digital Payments Accounts Bursar Mktg & rise in tuition Student fees? Include in tuition? Cost absorption by Univ? Add/Drops in relation to Costs Cost analysis for students Cost analysis for SNHU Billing table process – students pay by term? course?	Resources that cannot be delivered in course Legal review of opt out clause OER – how to collect, house and access OER vs off the shelf How to handle outliers	LMS Integration Testing Student Info Req (security risk) LTI Integrations needed to support Offline Access ePlatform features, functions, benefits Student interaction data Academic Technology	Course design/production work Can we integrate catalog? Support multiple modalities? Future resource recommendation LR course Dev process review Faculty Training Staff training Impact to existing timelines Role of LRMs? Course overhaul	Project resources Buy in Comm to leadership Change mgt All courses? Exceptions? Faculty access vs student access Project work stream members	Pilot approach Timeline Transition of courses to inclusive access Approval process	Advising & etext learning analytics Institutional Research Student elearning Data (Non par, new influx of avail data)

Fig. 7.1 Table of categories and considerations and questions for each

Fig. 7.2 Timeline of initial pilot implementation with major milestones highlighted

Title 34: Education
PART 668—STUDENT ASSISTANCE GENERAL PROVISIONS
Subpart K—Cash Management
§668.164 Disbursing funds

(2) An institution may include the costs of books and supplies as part of tuition and fees under paragraph (c)(1)(i) of this section if —

(i) The institution—

(A) Has an arrangement with a book publisher or other entity that enables it to make those books or supplies ***available to students below competitive market rates;***

(B) Provides a way for a student to obtain those books and supplies by the seventh day of a payment period; and

(C) Has a policy under which the student may opt out of the way the institution provides for the student to obtain books and supplies under this paragraph (c)(2). A student who opts out under this paragraph (c)(2) is considered *to also opt out under paragraph (m)(3) of this section;*

(ii) The institution documents on a current basis that the books or supplies, including digital or electronic course materials, are not available elsewhere or accessible by students enrolled in that program from sources other than those provided or authorized by the institution; or

(iii) The institution demonstrates there is a compelling health or safety reason.

Distributing Funds, 34 e-C.F.R. §668.164 2016

Fig. 7.3 Title 34

Table 7.1 Outline of the different categories of considerations, questions asked within that category, rationale for decision-making, and conclusions drawn

Topic	Questions	Rationale	Conclusions
Level of courses	Should we target undergraduate or graduate courses? If undergraduate, should the courses be 100–200 level or 300–400 level?	Most student experience impact Students who were familiar enough with the SNHU policies and standard term-start procedures under the old distribution model to be able to provide valuable feedback on the new model	Select courses that were undergraduate, higher level (300–400)
Enrollments	How many sections? How many students?	Small enough to avoid significant impact in the event of issues Enough students to get reasonable and usable data	Select courses with 25–100 total enrollments across all sections of the course for a given term (one section = 25 students)
Cost	What is the current price of the materials? Are there any markups on the item?	Price should be appropriate for the goals of the model	Price plus any applied markups are nearly equal to the price point for the desired resource fee
Content/ technology	Which publisher courseware was capable of supporting this model? Is our eText platform able to support this?	Courseware with the least overall impact to current state Minimal to no changes needed within learning management system (LMS) to support the courseware transition to inclusive access eText must be fully tested and functional eText must include ability to opt out	Select one course with a courseware product in use that meets the criteria, as well as one course with a standard eText in use

Table 7.2 Qualitative metrics: metric categories, questions to assess metric, and measuring methods

Metric	Questions	Measure[a]
Student satisfaction	What are the student perceptions of the ease of access to resources and of their use patterns of those resources? What is their comprehension of a flat-fee system, as well as perceptions of the overall value of the program?	Surveys sent to students toward the end of each pilot term with questions designed to gauge these areas
Faculty satisfaction	Do faculty notice a difference with their ease of access or issues during the term start related to accessing materials?	Feedback collected through standard end-of-term faculty survey
Advisor satisfaction	Do advisors notice a difference in the amount of pre-term troubleshooting related to resources or a prevalence of either positive or negative reactions from students?	Informal anecdotal data collected from advising team leaders

[a]All data points were benchmarked by surveying student from previous terms' courses not operating under inclusive access, specific to these metrics

Table 7.3 Quantitative metrics: metric categories, questions to assess metric, and measuring methods

Metric	Questions	Measure[a]
Access rates	Did more students access their course material before a term-start date or earlier than they had in previous terms?	Data collected from the eText or courseware platforms in use on first access data
On-time submission rates for assignments	With earlier access to materials, were students able to get started earlier and ultimately submit more assignments prior to the due date?	Data collected from the LMS on submission dates for major milestone assignments
Improved grades on assignments	Were students able to submit better quality work given their easier access to embedded course material?	Data collected from the LMS on success rates on assignments
Lower course drop/withdraw rates	Would the decrease in term-start anxiety and steps to gain access to materials lead to fewer students dropping or withdrawing from the course?	Data collected from the student information system on drops and withdraws from the pilot courses
Fewer service requests to Help Desk	Does the frequency of student help desk requests decrease due to the removal of the need to purchase, retrieve, and enter access codes for needed materials?	Data collection from service request and logging system examining number of requests and topic of request
Low opt-out rate[b]	For courses with eTexts, how many students opted to get the eText on their own rather than participate in the pilot program?	Data collection from eText platform on number of opt-outs against the total course enrollment numbers

[a]All data points were benchmarked by pulling data from previous terms' courses, not operating under inclusive access, specific to these metrics

[b]No benchmark data available on opt-outs for the first pilot term

Chapter 8
Establishing an Institutional E-Book Program: A Case Study for Change

Tracy A. Hurley and Douglas H. Carter

Background

Texas A&M University-San Antonio (A&M-SA) became an independent university in 2009. The campus was established in 2000 as a branch campus of another Texas A&M regional university. The university was housed on the campus of a community college on the south side of San Antonio, Texas, with a legislative charge to "close the gap" for the city's traditionally underserved Hispanic population. Independent status of the university was pending enrollment growth to 1500 full-time-equivalent students. In 2009, the university reached that goal and became a stand-alone university and the 11th campus in the Texas A&M University System. A&M-SA was a transfer-only university and relied exclusively on the local community college district to provide transfer students. Demographics of the student population were nontraditional – average age of 32, 68% Hispanic, and low income (nearly 70% were PELL eligible students). Many of the students held full-time jobs, attended school part-time, and had family responsibilities.

Still closely tied to the community college in 2009, A&M-SA faculty and students were serviced by the campus bookstore. As the Spring 2009 semester began, it became apparent that the community college's bookstore had little interest or capacity to continue this arrangement. That is, many courses and students started the semester with no textbooks – which had previously been ordered for the Spring term.

Given this situation, the campus leadership began to look at possible alternatives to meet the needs of faculty and students. Several options were examined – including a traditional textbook rental program and contracting with an independent bookstore. As this research progressed, a Request for Proposals (RFP) from the US

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Department of Education (FIPSE) was released which solicited proposals for textbook rental programs. One of the constraints of our new university campus was limited physical space. The university now resided in an old elementary school which was located two blocks from the community college. Enrollment was growing rapidly and all available space was being converted to classrooms.

A proposal was prepared in response to the RFP for an e-textbook rental program. In researching existing e-text programs, it quickly became obvious that few programs existed. Programs that existed were primarily located in for-profit and online programs. These programs mostly relied on one publisher for 100% of their content. The lack of e-text programs to emulate was due to three primary reasons:

1. The technology and bandwidth needed to establish a quality e-text experience was not widely available either on campus or with students.
2. Major textbook publishers did not have business models in place to initiate favorable terms for institutional program models.
3. Publishers did not yet have the capacity to create and distribute quality e-texts.

As the proposal was prepared, telephone calls were made to the top three major textbook publishing companies to solicit support for preferred pricing for an e-text rental program. In general, the idea was received with lukewarm interest, but all publishers agreed to provide a letter of support for the proposal. Ultimately, the proposal was submitted for the initial three-year e-text program. In October 2009, the proposal was funded for just under $300,000 over a three-year period.

In hopeful anticipation of receiving the grant, the university put forward a request to add an e-text course fee to the A&M-System Board of Regents in early Fall 2009. The request was approved later that year after the grant was awarded and before the program launched in 2010. The fees were capped at $150 per course. This new fee was critical and a required element of the program as it allowed the e-text program to charge students (and pay vendors) for any course content associated with courses.

Program Goals

As part of the proposal process, four broad goals were established for the e-text program:

1. The cost of e-texts would be no more than 10% of tuition and fees.
2. Academic freedom rests with the faculty.
3. Students enrolled in courses that are part of the e-text program will have access to the required content needed to be successful in the course by the first day of classes.
4. Students would have access to a printed copy of their e-texts.

Goal One The cost of e-texts would be no more than 10% of tuition and fees. With the cost of a three-hour course, in 2009, set at approximately $650, this meant that the goal was to provide e-texts to students for no more than $65 per course. E-texts

for many courses (primarily Humanities and Education) were priced under $65. Furthermore, electronic homework solutions that were available for various textbooks were made available for adoption for a fraction of the retail cost. In general, if faculty elected to use the electronic homework solution that accompanied their e-text, students paid an additional $10. At the time and based on the college bookstore prices, students averaged about $120 per course. In addition, electronic homework products were often as expensive as the textbook. As a result, for all courses that adopted an e-text, the average student would save just under 50% on textbook costs, and those that adopted an electronic homework product saved much more. Students enrolled in business courses where textbooks (at the time) were often priced over $200 saved nearly 70%.

As part of the agreement for reduced publisher prices, the program became an inclusive access program. This means that once a faculty member adopts an e-text, a course fee (appropriate to the cost of the relevant e-text) was applied to all students in the course, and it became included as part of the students' tuition statements. Students did not have the ability to opt out of the program once their faculty member adopted the program into their course. This restriction was necessary as required by publishers to protect their copyrights. The fear was that if some students could opt out of the program, other students in the class might illegally print or share the content. This would result in a copyright infringement of publisher content. In addition, publishers were able to offer reduced prices due to a 100% "sell-through." At the time, approximately 20% of all students typically purchased textbooks from campus bookstores. This e-text program ensured that 100% of students "rented" the e-text. While contracts with each of the publishers had some differences, most of the contracts allowed students to access e-texts for two years.

One of the important contractual agreements with the publishers included the timing of when students/university would be charged for the e-text. As with many colleges, A&M-SA has an add/drop period during the first 10 class days. During this period, students are allowed to adjust their class schedule. In order not to impede this process, the university is responsible for providing census date enrollments for relevant classes to publishers after the 10th class day. For the first 10 days of class, students are given temporary access to e-texts. After the census date, students are given full access to all subscribed electronic content. Once census date enrollments were provided to publishers, they invoice the university accordingly.

During the initial semester of the program, a common complaint from students was that they felt they could obtain used textbooks at prices that were less expensive than the e-texts. Subsequently, it became a responsibility of the program to monitor the cost of used textbooks when a new e-text was selected for a program. Since the goal was to reduce the cost of course content to students, if an equivalent used textbook was cheaper and readily available, the program coordinator would advise the faculty member. In many instances, however, the used textbooks available at a cheaper rate were international editions or older editions which were deemed by the faculty member as not equivalent substitutes.

Goal Two Academic freedom rests with the faculty. This meant that faculty were provided the option to adopt e-texts for their courses. Although encouraged to do so, the university made no requirement for faculty to add their courses to the e-text program. This meant that the program had a responsibility to provide choices, to faculty, in terms of publishers available in the program. When the program started, six publishers contracted to provide digital content within the inclusive access parameters of program. Faculty could select any e-text from any of these six publishers. Furthermore, many of the publishers provided the ability for faculty to customize their e-text in order to provide a custom solution designed to best fit the course syllabus.

As previously mentioned, it became paramount that this inclusive access program not be a single-sourced-publisher program. Although, one publisher offered deep discounts for this kind of program, the concept violated the program's emphasis on academic freedom, so that offer was declined.

Goal Three Students would have access to a printed copy of their e-texts. To achieve this goal, publishers were required to provide the university with copyright privileges for each e-text so that they could be printed should students elect to do so. Starting from the first day of classes, students could elect to order a black-and-white printed copy of e-text as well as having privileges to print the e-text themselves (note: each semester, students are allowed to print 50 pages from their university student fees and any additional page costs 10 cents per page). The printed copies would be an additional charge and were the responsibility of the student. One of the concerns for the program before it started was the availability of broadband Internet access in students' homes. Many A&M-SA students live in rural areas and/or come from low-income families who traditionally have limited access to broadband service. Although broadband service was available on campus, the lack of Internet access in students' homes meant that students would potentially have limited access to their digital course content at home. At the time, smartphones and tablets were not commonly owned by university students. In many instances, students only had access to computers and the Internet at school. Because of this, it was paramount that students be able to order a printed copy of their e-text.

Program Planning and Implementation

The primary emphasis of the FIPSE grant was to provide a jump start to a textbook rental program. With this in mind, proceeds from the grant were never intended to subsidize the cost of e-texts to students. Instead, grant proceeds were primarily used to build structure around the program elements so that it would ultimately be sustainable after the grant period. One of the major expenses of the proposal included salary for an instructional designer whose major responsibility was to coordinate with e-text providers, ensure student access, and train faculty on the adoption and use of e-texts in their courses. With inclusive access programs new to both

publishers and universities, everyone was on a steep learning curve to figure everything out during the 9-month planning period before program launch. During these busy 9 months, key accomplishments included program awareness to internal stakeholders, faculty and student training sessions, keeping publishers to agreed-upon timetables for e-text delivery, selecting a vendor and developing a distribution process for e-texts, developing a system for identifying courses in the program and adding appropriate fees to the Student Information System (i.e., Banner), identifying and securing a vendor for the e-text printing service for students to purchase a printed copy, and educating administration on program progress and specific elements. An additional element to be addressed was that in late 2009, the nascent university was beginning to negotiate with a bookstore vendor to provide services on campus.

Pre-program Planning

Two elements were identified as being key to program success: faculty adoption and student acceptance. In order to accomplish these two things, incentivizing faculty to adopt e-texts for the courses was of utmost importance. With grant funds, the program purchased 20 iPads and provided them to faculty who adopted at least one of their courses into the e-text program. With a full-time faculty of about 50 at the time, this seemed like a reasonable starting point. It is important to note that the first iPads became available in early 2010 and cost about $650 (with two-year Apple warranty). Many faculty were interested in using the iPad in their classes and the e-book reader app was very user-friendly. The program was so popular that soon we had to purchase ten additional iPads for interested faculty. By program launch, about 25 faculty (or about 50% of full-time faculty) had adopted e-texts for at least one of their courses; many of them adopted e-texts for all of their courses.

Along with an incentive to encourage faculty to adopt e-texts, a series of faculty training sessions was developed and launched during the planning phase. Important elements included educating faculty as to what exactly the e-text program was, how it could be used to benefit students (i.e., reduced costs, accessibility, etc.), how to customize e-texts for their courses, what the costs of the e-texts were and the savings to students the program represented, as well as how to incorporate the iPad into their classroom.

Promotion to students about the program also began during the planning phase. This mostly included flyers posted in key areas on campus identifying program elements, cost savings, etc. In addition, two students were recruited as “e-book ambassadors” to assist with building awareness with students and, ultimately, with assisting students with accessing and utilizing their e-book. E-book ambassadors were trained similarly to faculty and were also provided an iPad. Once the semester began, they were tasked with being available to visit classrooms for faculty to provide information to students and visiting common student areas such as the cafeteria to provide assistance to students as needed.

One additional educational element which was not anticipated was the need to educate publisher sales representatives as to what the program was, how it was structured, what the costs were, etc. There were several instances in which publisher representatives shared inaccurate information with faculty, and this created confusion within the program ranks. Although publishers had teams of digital content professionals, their ability to meet deadlines was often a challenge. This resulted in several of the e-texts being delivered late and not being available by the first day of classes.

E-Text Printing Service

A critical element of the program was that students have the ability to have access to a printed copy of their e-text. As part of the contractual agreement with publishers, students could first print the e-text in ten-page increments on their own printer, and second, publishers provided the university with the rights to have the e-texts printed by a third-party vendor. The cost of printing e-texts was the responsibility of the student who ordered the copy. All of the third-party copy service was on-demand. No inventory of e-text copies was kept.

During the initial year of the program, approximately 25% of students ordered a printed copy of their e-text. Favorable prices were negotiated with a well-known copy vendor for $.05 per page. This resulted in printed copies being available for between $12 and $30 – depending on the number of pages in the e-text. The original ordering process included a paper-based order form – completed and submitted to the university's business office (and paid for) – and at the end of the day, transmitting those orders to the vendor for production. In approximately 3–5 business days, the e-text hard copies were delivered to the university for distribution to students. In theory, the process was cumbersome but manageable. In reality, it was a nightmare. Students would order copies of e-texts for the wrong class, long lines in the business office to order printed copies were the norm, the vendor would not print the correct number of copies, and the vendor was not prepared for the huge demand for copies ordered during the first three weeks of the semester and accordingly would deliver the copies up to two weeks late and deliver copies that were missing pages. Program staff had to maintain inventory of printed copies (before students picked them up) and distribute them when students came to pick them up. This consumed valuable university office space for weeks. In addition, inventory management and distribution of copies to students consumed huge amounts of personnel time, and this effort was not sustainable. The choice of vendor originally was based on its reputation for producing high-volume, high-quality copies and their expeditious delivery process. Needless to say, a serious conversation with the vendor took place in a debriefing meeting after the first month of the program. While changes were made in an attempt to improve service to include online ordering and payment for students, ultimately, the program switched vendors for the second year, and the internal processes were changed to reflect a mail delivery of copies to the students' homes directly. This removed the university from being in the middle of the distribution channel.

Accessibility

As the program planning moved forward, it became evident that the program needed to ensure accessibility of digital content to students with disabilities. Many early e-books and digital readers did not provide digital content in a format that was accessible to all students. For this reason, the program coordinator was responsible for coordinating with the university's Disability Student Services (DSS) and the publishers to provide content in a format that was accessible. Often, this meant that the publishers needed to provide a hard copy of the e-text to the university's DSS service so that it could be made accessible. As the program grew and technology improved, the e-book platform and publishers began to offer content in audio and EPUB-3 formats which are now the program standard.

Applying Fees in the Student Information System (SIS)

Since A&M-SA was a new university, it shared a SIS with its mother university. This created countless issues with the adding of course fees. For instance, both universities had the same course numbers, and if a course fee was added to one of the classes, it was added to all courses. Therefore, it became necessary to add the fees at the section level (versus the course level). This created problems when new sections were added and when faculty switched sections. As a new university with double-digit enrollment growth, new sections were often added weeks before school started. If the fees were not placed on the section before the schedule was released to students, fees were not reflected in the student's tuition statement. This resulted in students being charged late and sometimes for students being dropped from classes due to unpaid balances on their account.

One significant benefit of adding the e-text fee on to course fees was that the fee became part of the students' tuition and fee statement paid for, in many instances, by their financial aid package. This resulted in all students having access to needed course material without having to make the decision about whether to buy textbooks or pay rent (for example). Prior to the e-text program, students would often not purchase needed textbooks and would often rely exclusively on classroom slide presentations, older textbook editions, or illegal copies of a friend's textbook.

E-Text Platform and Distribution of E-Texts to Students

One of the important characteristics that were important to the program was the ability of students to access their e-texts offline (i.e., the ability to download some or all of the e-text for offline reading). In addition, it was important that there be a central location for students to access all of their e-texts as opposed to having to go to a separate publisher proprietary platforms to access their e-texts. Because of this

requirement, a third-party e-text platform was selected to provide access to students' e-text library. At the time, publisher proprietary platforms did not allow offline reading.

Ultimately, e-text access was incorporated into the university's Learning Management System (LMS) in the original year of the program, and access codes were sent to students in order for them to access their e-texts. Access codes were generated by program staff and Outlook Mail Merge was used to send the codes to students enrolled in individual classes. In many instances, these emails were trapped in junk folders, were not received, were not paid attention to, etc. This meant that a good number of students did not have the information needed to access their e-texts. While this was an ongoing problem for the first semester, the problem was quickly resolved if a student notified their instructor or program staff they did not have their access code. Before the beginning of the second year of the program, the vendor created a LMS building block that allowed the e-texts to be embedded into the students' courses. This removed the university from the responsibility of distributing access codes to students.

Campus Bookstore

By coincidence, A&M-SA received the FIPSE grant during the initial RFP process for a campus bookstore. With this in mind, by the time the campus was negotiating with the bookstore vendor, the existence of the e-text program was known. It was made clear to the bookstore vendor that the e-text program was going forward and an exception to their exclusivity clause would need to be established. Ultimately, the bookstore vendor agreed that as long as the e-texts were identified by a unique ISBN and that ISBN could not be bought or rented by students outside of the e-text program, this would be an allowable exception to their exclusivity clause.

Program Implementation and Evolution

As previously mentioned, approximately 50% of the full-time faculty adopted an e-text for their courses. Part of their motivation to adopt an e-text was due to their ability to obtain an iPad once they adopted an e-text for at least one of their courses. This meant that about 50% of the courses were established as e-text courses and about 50% of the students were enrolled in an e-text course. For the first semester in Fall 2010, the e-text program served about 1250 students, 30 faculty (including some part-time faculty), and 100 courses and issued 4,600 e-texts. The average course fee was $64 which represented 9.5% of tuition.

As the program launched its first semester, the program employed one full-time (100% FTE) instructional designer/information technology analyst, a 20% FTE administrator (who spent closer to 50% of their time managing and implementing the program), a 49% FTE student worker, two student ambassadors (who were

fulfilling their duties as part of an internship course), and a dozen staff and student workers who had no official time allocated to the project but yet spent many hours in service of the program (via "other duties as assigned").

Technology

Given the demographics of the university and their general lack of access to technology, one common student complaint was that reading the e-text on a computer screen hurt their eyes. Specifically, the students worked all day long on a computer screen and were not happy with having to use a computer to read their e-text. Toward the end of the second year of the program, the university bought 150 iPads with remaining FIPSE grant funds and rented them out to students for a nominal fee. The fee was established to pay for device insurance, to help defray maintenance costs, and to establish minimal accountability for students. The iPad rental program was very popular, but by the end of year 5 (2015), most students had smartphones, iPads were getting old, and the demand for iPads was virtually nonexistent; the program was discontinued.

Program Staff

A&M-SA was one of the first public universities to adopt an institutional program. Originally funded via a FIPSE three-year grant, the program was institutionalized in 2011 which ensured its continuation beyond the FIPSE initial grant period. Once the initial phase was completed, planning continued to determine processes to improve the program, continue to keep costs low, and to serve students and faculty. Once the program was institutionalized and before the grant funds expired, a decision to add a flat $5 fee per course to the cost of each e-text to pay for a full-time program coordinator/instructional designer was approved. With the program issuing 6,700 e-texts a year in 2013, the additional fee was able to cover most of the salary expense. By 2017, the program was issuing 20,000 e-texts a year; accordingly, the fee was reduced to $3 per course. The monies generated, even with the reduced fee, were more than enough to cover the salary expense for the program coordinator. The management and oversight of the program rested with the program creator and original manager, the dean of the college of business, as part of her regular duties.

Shared Revenue and the Bookstore

As the university grew and a new chief financial officer (CFO) was hired, it did not take long before top leadership had to confront the issue of a loss of "shared" revenue from the bookstore. With the exclusivity clause exception, and about 50% of

classes being serviced by the e-text program, the bookstore had become more of a "spirit" store than a bookstore as most of their sales revenue is generated by logo-based apparel such as t-shirts, sweatshirts, bags, etc. In 2013, a proposal for the e-text program to be consumed by the bookstore would have resulted in an increase in e-text costs to students of over $30/course representing nearly a 50% increase. At the heart of the argument, by e-text program champions, was that the university needed to decide which of the two perspectives was a higher priority:

1. To maximize income to the university for discretionary spending, or
2. To reduce the costs of higher education to students.

Ultimately, the bookstore's proposal was declined. With that said, modified proposals for a similar agreement have resurfaced two other times. As of the writing of this chapter, they have all been declined by university leadership.

E-Text Printing Services

By 2013, the program had grown to serve 2000 students, 76 faculty, and over 200 courses and issued 6,700 e-texts. One of the biggest challenges remained was the program's inability to provide a reliable printing solution for students. By the end of year five, a third printing vendor was employed as there were still substantial issues with providing a competitively priced, quality product, delivered in a timely manner. While each time a vendor was hired, program staff emphasized "there would be high volume" over the first three weeks of classes. Regardless, vendors never fully grasped the idea of what was meant by "high volume." By 2017, the e-text platform vendor begins to offer printed versions of the e-text, ordered on-demand via a link through the student LMS. This printed version was more expensive than the previous system, but it was a much more reliable quality, and it came bound for student convenience and was reliably delivered within two weeks after order, directly to students. In 2018, one of the publishers began to offer a full textbook rental program – delivered to students enrolled in an e-text course – for an additional $25.

Current Status

By Spring 2019, the program's ninth year, university enrollment has grown to 6,200 students (headcount) and 200 full-time faculty. It is estimated that the e-text program will issue 25,000 e-texts to 1315 classes (or 47%) during the 2019–2020 academic year which involves approximately half of the university's full-time faculty. The program utilizes 13 publishers, and the average e-text course fee is $65 including any electronic homework manager products. The range of prices are from $35 to $110 with the higher priced e-texts generally including two-semester courses such as Intermediate Accounting, General Chemistry, etc. The cost of a

three-semester-credit-hour course is $1,081. This means that e-texts cost only 6% of tuition and fees during the 2018–2019 academic year. While there are still some differences in contracts from publisher to publisher, most publishers provide three years of access to their e-text. A few boutique publishers offer perpetual licenses which are indefinite and have no expiration. It is estimated that the program saves the average full-time student about $560 per year and the e-text program saves all A&M-SA students about $3.5 million per year over the cost of traditional textbooks (see Appendix A).

The reception of the program has varied by stakeholder group(s). For instance, business faculty and their classes often have over a 95% adoption of e-texts. This is likely due to the fact that in general, business textbooks are more expensive than most other disciplines. It is not uncommon for business textbooks to cost nearly $300. The e-text program provides for a dramatic reduction in costs. It is also possible due to the more acceptance and familiarization of business students with technology than students enrolled in other disciplines. Education students and faculty also are, in general, favorable to the e-text program – although to a lesser extent than business students. Historically, approximately 50% of education courses have adopted e-texts. The general acceptance of faculty and students in Arts and Sciences is mixed. Science faculty tend to embrace the program; humanities faculty tend not to be so embracing. Historically, approximately 25% of Arts and Sciences courses have adopted e-texts.

Lessons Learned

Going into the tenth year of the program, the e-text program has emerged as one of the leading programs in the country. The program's emphasis on academic freedom and to maintain low prices has led to the program's growth and success. Currently, it is one of the largest and most diverse e-text programs in the country. This success is due primarily to learning from mistakes, having a commitment to program excellence, and an allegiance to program goals among program staff.

In general, the lessons learned focused around seven major issues:

1. Pilot, pilot, and pilot,
2. Using access codes to distribute e-texts,
3. Delivering a quality e-text printing option,
4. Availability of technology (or lack thereof) by the student demographic group,
5. A lack of comparable programs to emulate,
6. A distinct resistance to change among students and faculty, and
7. A steep learning curve on the part of publishers.

Before the initial semester began, it became obvious that the program started too fast and too large. With the incentive of an iPad, faculty were motivated to adopt an e-text. Unfortunately, the number of faculty, classes, and students outpaced the capacity of the program's infrastructure. It took a full year before the program's

infrastructure could catch up to the program's demand. In hindsight, the program should have started as a small pilot and built on success.

From the second day of the initial semester, the pursuit began for a solution to distribute e-texts that did not include access codes. Access codes were commonly used (and still are) by students to access content which is purchased at university bookstores and online. However, this type of e-text access system was not scalable. With the initial distribution of 4,700 e-texts, it quickly became obvious, this system was completely ineffective. It took an entire year for the e-text vendor to create and provide an LMS building block which issued access codes on the back end of the vendor's database. While there were additional hiccups along the way with this new access process, it was a much-improved system. A similar system, albeit refined and improved, is still utilized today.

As mentioned previously, a continuous attempt to improve the e-text printing service continued for six years. In the seventh year (2017), the e-text vendor took over the printing service, and while it was more expensive, the quality and delivery service was much improved. There are still occasional issues with the service, however these issues pale in comparison to previous renditions of the service. In recent years, some publishers have also begun to offer discounted options for regular textbook rentals to e-text program students and loose-leaf printed copies. As the program continues to progress and these kinds of programs become more common, other innovations by publishers are likely to develop and continue to improve and enhance this option for students.

A significant issue identified early in the program was the impact that a lack of technology had on some students being able to maximize e-text usage. While some students had broadband Internet access at home, a high percentage of our students did not. Although, the original platform provided an e-text download option for students, students often did not own laptops that would allow them to download the e-texts at school that would, in turn, enable reading at home offline. In an attempt to resolve this problem, the university started an iPad rental program during the second year, and this program continued until smartphones, tablets, and broadband Iaccess were available to most students 4 years later.

The lack of a comparable program to emulate essentially meant that everything in program development was untested. Each and every program element was new. This was exacerbated by the steep learning curve on the part of textbook publishers. At the time, publishers were also new to the idea of an institutional e-text program. Their ability to overpromise and under-deliver was uniform across the majority of publishers. This often led to e-texts that were of poor quality, delivered late, and edition mismatch when compared to textbook editions pushed by publisher representatives. By the beginning of the second year, quality control on the part of program staff became a significant part of the program service and continues today. Publishers have improved dramatically, but their relatively high employee turnover – by publisher representatives and technology staff – continues to impact service to the program and students.

Lastly, one of the biggest hurdles to program success at the beginning was the resistance to change on the part of both students and faculty. For students, it was

common to field complaints during their first semester enrolled in the program. Complaints stemmed from their resistance to change related to their uncomfortableness with technology and their general dissatisfaction with their inability to purchase (or not) their own textbook from another vendor. However, many students changed their attitude to the program by the beginning of their second semester. The low-cost convenience that the e-text program offers is quickly embraced by most students. Year over year, the program receives a student satisfaction score over 70%.

Conclusion

A&M-SA's e-text program is an innovative program which provides an effective solution to an identified problem. The program reduces the cost of course content for students while maintaining academic freedom for faculty. While it has been a successful program, the landscape of inclusive access programs has evolved over this time period. Programs that emphasize Open Educational Resources (OER) are one example of a program that is becoming increasingly popular. OER and inclusive access programs are potentially viable programs that have both advantages and disadvantages. The solution identified should be driven by the goals of the program and not restricted to a narrow definition of the problem. For instance, A&M-SA's program is driven to reduce costs – not to issue e-texts. Because of this, a review of the price and availability of used textbooks is part of the program's service to faculty.

Two of the important takeaways to launch a successful program are the advocacy by faculty and support by administrators. Ultimately, administrators will need to decide how they will deal with a loss of shared revenue from the university's bookstore and how that may impact the bookstore and its services to students and other stakeholders. The potential cost savings to students is significant.

Chapter 9
Three A's to Inclusive Access: Tarrant County College's Case Story

Mark McClendon and Tyson McMillan

Introduction

Inclusive access—"TCC Plus"—provides a digital textbook option for students, which may include other ancillary tools for both faculty and students at a lower cost. This option was established to be equal or higher quality/lower cost than the present educational material being used by students for their respective courses. In addition, it would be accessible to students on the first day of class or sooner, with a print option at an extra cost (which would be less than what they are currently paying). In the event the student did not wish to buy this material and use a hardback textbook, the student could simply opt out and purchase the material on his or her own.

TCC Plus is a new educational material (textbook) model for the college that is taking force across the education landscape. The outlook of textbook publishing shows to be moving toward producing cost-effective digital versions due to the increased costs of hardcopy production—including delivery, inventory, storage, and human resources. The TCC Plus initiative was established in collaboration with top publishers to provide textbooks in a digital context fully realizing the great success industry has had with supply chain partnerships. A cross-functional project team (Appendix A) worked diligently to ensure strategic planning and implementation of the pilot for Spring 2018. Pilot participants included 23 faculty members (Appendix B) who were "early adopters" of the program. The general district administration process can be found in Appendix C. District administration approved to extend the pilot to Fall 2018 by welcoming current and additional participants. Fall 2018 expanded to 88 sections. Additionally, the program expanded to a soft launch in

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Spring 2019 when faculty interest in the program ballooned to 189 sections. Summer 2019 went to 65 sections and Fall 2019 was the largest thus far with 261 sections. TCC expects the program to continue to grow; however, that growth has required much effort on the part of several key stakeholders at the institution. In this case study, we tell the story of inclusive access at TCC thus far.

Problem Situation

TCC is a public higher education institution, which provides 2 years' associate degrees and technical certificates with campuses located in Fort Worth, Hurst, and Arlington, Texas. Approximately one in every 22 Tarrant County residents takes a class at TCC each year. Fall 2017 credit enrollment was more than 52,000 students.

According to McKenzie [3], statically, 50% of community college students in the nation do not buy textbooks/educational material. This was also corroborated by the Inside Higher Education Leaderman [2] survey of 400 students whereby 42% of the students said they had "avoided purchasing the course materials at all." TCC student statistics reflect the same behavior. If the McKenzie statistics [3] holds true, the lack of educational materials also impacts student success in the form of lower grades. Leaderman [2] results indicated that over 66% of the surveyed students felt they could have done better academically if they had access to the course materials on the first day of class. TCC Plus began its journey with students first in mind. The goal of TCC's inclusive access program was to provide cost-effective course material to students. TCC feels that we can move this needle by making textbooks affordable and having educational materials on hand the first day.

Textbook publishing is also moving towards cost-effective digital versions. This has come about from the necessity of survival of the publishing industry. Instead of moving paper all over the world right now, they realized that by using a digital platform or digital courseware, educational materials are now becoming increasingly more affordable. However, when we looked at this scenario solely from a finance perspective, we asked, "How could we reduce the total cost to students?" When analyzed, the total cost of education is very difficult for us to reduce. Costs such as operations of the college or tuition leave little room for cost reductions. TCC has one of the lowest tuitions in the nation at a $64 per semester hour for in-county tuition. Therefore, educational material is the only area that we can significantly reduce the total cost for student education. At 2-year higher educational systems, we are sensitive to the costs students spend on tuition as much as they spend on textbooks. Our preliminary data found that 8.4% of our students believe that they do not need a textbook because it costs too much. Therefore, the reduction in the cost of textbooks is something that can really impact the lives of students.

Background

Dr. Mark McClendon, vice-chancellor of finance, and Dr. Tyson McMillan, professor of computer science, cochaired a cross-functional task force to plan and implement this initiative. Dr. McClendon has areas of responsibilities include purchasing, financial services, business services, auxiliary services, and police and emergency services. Dr. McClendon's educational background is a bachelor's and master's degrees from the University Arkansas and an MBA from the University of Chicago and an EdD from Vanderbilt Peabody College of Education. Dr. McMillan is a professor of computer science at the TCC Trinity River campus. He is also a past Joint Consultation Committee (JCC) chair and elected leader of the district faculty association. Additionally, Dr. McMillan serves as department chair of computer science and is a proud TCC alumnus. Dr. McMillan finished the associate degree after completing the PhD. His background is in both business and technology with a Bachelor of Business Administration in computer information systems, Master of Science in information and technologies, and a PhD in information science. The collaboration of McClendon and McMillan was no doubt a vital key to the success of the project.

TCC created a cross-functional project team to develop an inclusive access program that works best for this initiative (see Appendix A). From the beginning, leadership strategically included individuals from various stakeholders that would actually work and corroborate with the most critical areas to make this initiative happen. Members of the team not only had a voice, but a responsibility for the ultimate success of the program. Dr. McMillan recommended that the academic representatives should be leading the way. He, in parallel, ensured that the faculty senate would be included in the discussions. We included operational departments such as the registrar, business services, technology, finance, and academic curriculum committees, as well as a campus president. We selected a team in which members had a key role to research and strategize for a solution and implement the TCC Plus program. Accordingly, students have an option to select an inclusive access course and thereby have an affordable opportunity to succeed.

The TCC theme is simple: student focused, faculty driven, and administratively supported. At the time of this case study, we created processes, procedures, and data points from Spring 2018 to Fall 2019. In particular, this work focuses on the process that TCC went through to make the decision to start the program, why we did what we did, the elements of our program, and future plans. TCC Plus is about being persistent to maintain our course to ensure a student receives every opportunity to graduate. Inclusive access at TCC is all about affordability for our students.

TCC Plus is a fundamentally new approach whereby we created a one-college triad. One of the charges given by the chancellor, Eugene Giovannini, was that faculty would be at the forefront of this initiative and he wanted to make sure that administration could alleviate some of the administrative workload. He also wanted to ensure that the process was seamless to the students and the college worked as a single organization. TCC Plus is about our journey to meet this important charge (see Fig. 9.1).

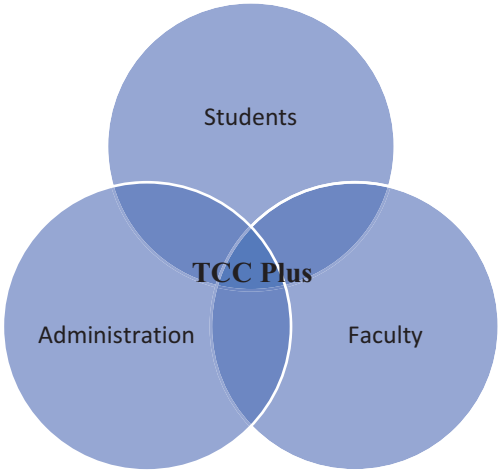

Fig. 9.1 TCC plus triad

TCC's Solution

The cross-functional team with various key stakeholder areas was necessary for the implementation of this initiative (Appendix A). Innovative ideas emerged from each meeting. One such idea was that we needed to brand this program in a way that appealed to the students of TCC.

Branding

We know that students have many distractions so a way to capture their attention is vital. How did we arrive at TCC Plus? We really wanted to have branding that was crisp and concise due to character limitations on our online screens used during registration.

Branding initial considerations established:

1. We wanted to have branding that was broad enough to allow for durability and longevity:
   (a) With an option to expand in the future with different aspects that we wanted to do
2. A simple icon for presentation purposes to our various stakeholders:
   (a) We wanted to underscore the program as a value proposition in order to save time and money.

We looked at several ideas to associate the brand itself and ultimately arrived at TCC Plus.

Fig. 9.2 TCC plus branding

The process involved interaction with a student focus group and a focus group of advisors and narrowed it down to two names. One was considered popular among the advisors by a 4 to 1 ratio, but TCC Plus was popular among the students. We gave the students a voice (i.e., student-focused concept) and the students' choice of TCC Plus became the brand for the program.

Resulting Brand
The icon (Fig. 9.2) was designed to work well on various backgrounds for multiple backgrounds, whether digital, online, or paper.

Program Mission

Our mission was to accomplish two objectives; however, as we started, we initially only wanted to reduce cost. Lower cost would produce a measurable outcome, so that anybody who analyzed the benefits would concisely and decisively select this option and see its merits. The second objective was driven from the academic side, students having course material on the first day of class, and the benefits of having these on the first day of class.

Spring Pilot 2018

We initiated our TCC Plus initiative with a pilot in the Spring 2018 term. The pilot was launched with 23 sections from faculty who had volunteered as early adopters or technology-savvy faculty. The 23 sections yielded a student enrollment of 617. The results are reflected in Table 9.1. Student savings per course ranged from $60 to $200 depending on the course discipline with average savings of $90/per student per course. The total savings was $56,000 for all students which can be found in Table 9.2.

From the beginning of the program, a diversity of disciplines was represented. The academic disciplines included business, management, chemistry, computer science, education, English, government, history, math, music, psychology, and

Table 9.1 TCC plus Pilots description and outcomes

Semester	Sections	Students
Spring 2018	22	617 (actual)
Fall 2018	88	2640 (approximate)
Spring 2019	189	5670 (approximate)
Summer 2019	62	1860 (approximate)
Fall 2019	261	7830 (approximate)

Table 9.2 Spring 2018 data

Inclusive access Spring 2018 Pilot[a]					
Course description	Student enrolment	Cost to students[b]	Retail cost[c]	Savings/ student	Savings per section
BCIS-1305-21001	24	$120	$229	$109	$2607
BCIS-1305-41009	19	$120	$229	$109	$2065
BUSI-1301-40219	23	$51	$126	$75	$1734
BMGT-1301-86123	28	$96	$166	$70	$1958
BUSI-1301-86124	16	$96	$213	$117	$1865
CHEM-1405-11209/11208	45	$94	$151	$57	$2553
CHEM-1406-51100/51105	47	$94	$263	$170	$7973
COSC-1301-30019 (cancelled)	0	$120	$218	$98	$0
COSC-1436-57005	29	$66	$176	$110	$3186
COSC-1436-40398	29	$66	$176	$110	$3186
EDUC-1301-11049	21	$27	$111	$85	$1775
ENGL-1302-41521	17	$19	$57	$38	$647
ENGL-1302-21075	27	$39	$144	$106	$2857
ENGL-2332-41624	30	$37	$91	$53	$1601
GOVT-2305-21412	30	$50	$117	$67	$2000
HIST-1302-10101	13	$54	$124	$70	$915
HIST-1302-10102	17	$54	$124	$70	$1196
ITSW-1407-86010	28	$80	$299	$219	$6129
MATH-1314-41101	36	$94	$174	$80	$2880
MUSI-1306-40535	24	$51	$118	$67	$1598
PSYC-2301-41101	66	$54	$110	$56	$3691
SPCH-1311-41010	22	$66	$144	$78	$1711
SPCH-1311-86101	26	$66	$144	$78	$2022
Totals	617	$1614	$3704	$2092	$56,149
Notes:		$70	$161	$91	$91
[a]Approved by the Board of Trustees		Average	Average	Average	Average
[b]Includes Sale Tax					
[c]Amounts are Rounded					

Table 9.3 Associate degree cost of tuition and course material comparison

Comparison of associate degree cost using Pilot text book average and exiting course material average						
Description	Courses necessary	Average retail textbook cost	Total book cost estimate	Tution cost	Estimated cost of tution & course	Percentage
Present situation at TCC						
Associate Degree	20	$161	$3220		$3220	**46%**
Tution ($64/H)				$3840	$3840	**54%**
				$7060	**100%**	
Based on the Pilot of 23 sections						
Associate Degree	20	$70	$1400		$1400	**27%**
Tution ($64/H)				$3840	$3840	**73%**
					$5240	**100%**
Difference between actual situation & inclusive access					**$1820**	**26%**

speech. It is a cadre of different courses. In addition, as you can see from the charts (Table 9.2), the larger savings were generally in the math and science as well as information technology disciplines. Overall, cost savings to students in Spring 2018 came to $56,149.

The team posed the question of "How much could a student save on an associate degree, which is a principal unit of measure of college completion?" To approach the inquiry, we could use the average textbook cost of $161. Average inclusive access course material cost $70, and normally it takes 60 credit hours to obtain an associate degree. We calculated tuition cost constant at $64 per semester credit hour for TCC in-county tuition rate—Table 9.2. The economic benefit for an associate degree can be seen in Table 9.3.

The use of inclusive access class material would provide a 25% overall savings and specifically $1820 for average associate degree.

After the Spring 2018 pilot, we realized that having variable prices for every course was not scalable. Thus, we decided we needed to rationalize the pricing into a set of groups or tiers. We established tier pricing for logical combinations of disciplines. We established six (6) pricing tiers to cover all potential courses in the program. This helped to simplify the pricing structure and reduced the time needed to price each set of course materials separately. As we continued the pilot, in Fall 2018 we experienced a growth of 380% achieving 88 sections, which included approximately 2640 students. In the Spring 2019 term, we doubled enrolment to 190 sections, which includes about 3500 students. By Spring 2019, we had an average savings per class of around $56.

TCC Plus Whole Process: In Detail

The following describes the normal steps followed in preparing the TCC for an inclusive access selection process for each semester. The steps are as follows:

1. Academic Affairs works with the faculty curriculum team to determine common learning materials by discipline (CLM).
2. Publisher pricing on the selected textbooks are assembled into a spreadsheet.
3. We use a 1-month back-date method to create TCC Plus deadlines.
4. Build the Google Form for the current semester (i.e., Spring 2020 faculty opt-in).
5. E-mail completed Google Link to various institutional key stakeholders to distribute to interested faculty members.
6. Develop GoogleDoc Spreadsheet site for accumulation of all needed information. This is a dynamic (subject change) spreadsheet. This data will be used in several other phases.
7. Additional negotiation is completed with the publishers in terms of tier pricing of the desired TCC Plus textbooks selected by faculty from the list of CLMs.
8. Gather the full course name section numbers for courses that are designated TCC Plus. This is a large collaboration with each of the 6 campuses, as each respective individual campus has section building authority and responsibilities.
9. Assemble Master Spreadsheet for business services, purchasing, and section support.
10. Deliver all needed information to business services to modify course sections to include I/A fee.
11. Registrar/section support to add TCC Plus link and fee to section notes that students see.
12. Business services to link fees to AR codes. This is needed for accounting reconciliation.
13. Deliver all information to bookstore to be incorporated into Bookstore system.
14. Bookstore to build out their system.
15. Implement all previous steps prior to when courses go live for student view.
16. Follow-up with advisors.
17. Create adjustments to our bookstore reconciliation report to give a head count for each course.
18. Students register for the courses using our standard systems and processes.

In order to meet important deadlines, the TCC Plus team developed a “back-dating” model from the date that courses go live for student registration.

More on the Faculty Process

Faculty members have full autonomy in the decision to participate or not participate in the inclusive access initiative. An inclusive access section has the following parameters: (1) the course materials will be delivered digitally and provided through the Blackboard Learning Management System (LMS) directly to the student account; (2) the student will have a better price, with the cost included in the tuition; and (3) the student can opt out, but they will have to secure the course material on their own. We discovered in our research that when faculty are given the full autonomy in course material selection process for their class, they exhibit the most successful results. Therefore, TCC adopted this as their operating model. It is at the core of what we do and has made us successful thus far. The course material fee is added to the student's tuition cost at registration. As per the federal regulations, students must be given the option to opt out via our system [1]. Opt out means that they would secure the course material on their own. We also developed an opt-in process if a student decides, within a reasonable time, they want to pay the course material fee.

How Does It Work?

What is unique about TCC Plus is that 100% of the students have digital access to the textbook on day one. This has implications for the faculty member which has changed the way they approach pedagogy for the first week of classes. Whereas many faculty used to delay a week before getting into the bulk curriculum, they can now start immediately. When 100% of our students have access to the textbook on day one, then the course pedagogy can begin immediately.

For those who need a tangible copy of the textbook in hand, a low-cost print option is also available from the TCC Bookstore. Once they purchase the digital textbook, there is a process for obtaining a digital print option as well if desired.

Pilot Student Data

Some additional statistics related to the Spring semester were as follows: Unfortunately, we had one class that did not comply. We believe that 6:30 a.m. offering was one of the reasons why the class did not comply. Even though when we talked about administrative support, we still acknowledge the importance of academics at the campus level to make decisions about which classes are going to comply and which ones do not. The campuses have control of how to manage and build sections.

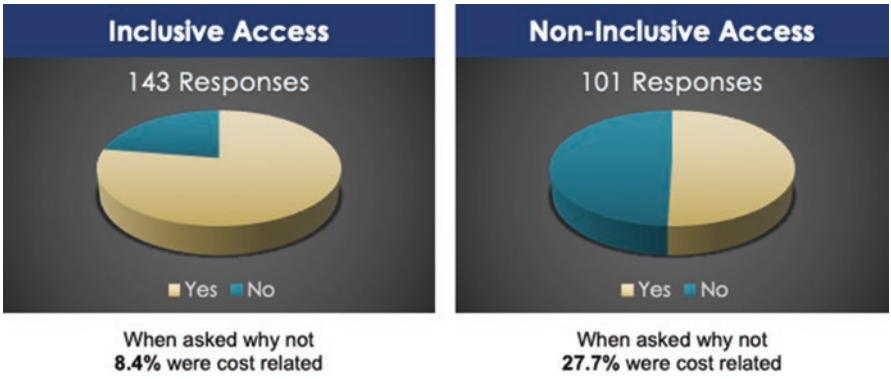

Fig. 9.3 Textbooks among student respondents—Spring 2018 pilot

In the Spring we were trying to ensure that faculty were simultaneously teaching an inclusive access class and a noninclusive access course and would therefore be able to make a true comparison. Our population consisted of 617 students in the inclusive access sections and 528 in the noninclusive access; also at the bottom of Fig. 9.3, we can see that 11 out of the 617 students decided to opt out. There was one example of a student who decided to opt back in because he or she may have determined that one cannot find the textbook at a low cost or below market rate price outside of the program. Eleven (11) out of 617 is well below our expected national average of about 5% of students who opt out of the program. With 95% of students having and keeping the text throughout the semester, it has the potential to move the needle in a manner better than we could have imagined.

Some of the preliminary statistics of inclusive access classes versus the noninclusive access classes were not expected. When inclusive access students were asked if they had a textbook on day one, we found an unexpected reply. All students had the course material available on day one; however, not all students were aware that they had access to the text. We determined that going forward, we would need to determine how to properly educate the faculty and students on how to access their particular digital content resources.

Results of the Solution

Student Benefits

The precept of student benefit became the central theme and very important to all members of the task force. This idea is what drove each member of this task force which we had the honor of cochairing. Each member of the task force was focused on the benefits to the student. Students are provided a more affordable option of the textbook—generally, a much better cost than a traditional hard copy textbook. It

also is covered by student's financial aid. They have digital access to digital e-text on day one via the LMS. TCC uses Blackboard to give the student access to the textbook on day one. A reasonable cost print option is available for those who wish to have a physical book costing approximately $20–$30 plus tax. No access code is required, which previously caused many accessibility concerns. The fact that the textbook is already integrated with no access codes made whole departments sign up on a voluntary basis as a result.

Faculty Benefits

It is an incredible benefit for a faculty to know that the entire class has the course materials on day one. This changes the way faculty think about teaching and how we can optimize initial learning with students. The second salient point is that faculty know that all students will actually have the course material. We probably are not measuring these statistics as we know it relates to student success. We should perhaps consider the excuses we hear at the beginning of each semester but will no longer have any validity—"I still do not have my book professor can you please slow your pace?" Course materials on day one means we can begin working on assignments immediately.

Another important tool available to faculty is the ability to know how the students are using the digital book; a myriad of data on the actual usage are now available to the faculty—how many pages have been read, how many problems have been performed, where the student is getting stuck, etc. Future exploring should look at faculty benefits in terms of data now available about students' access, usage, and time spent in the course material. This data can have incredible effects on how we teach our students.

Faculty can make assignments immediately available to everyone because all students have access on day one including access to the ancillary materials. That is, we have yet to explore some of the technical benefits of this particular model.

Initial Data Points and Conclusions

TCC initial data points are hopeful. In Spring 2019, TCC Plus had $56.05 in average savings per class over current common learning material prices. The program has book options for 75% of the courses at TCC. This program acknowledges that faculty training and support are vital to sustain success. Further, TCC Plus is a program of voluntary participation of the faculty members. Our program has achieved a 98% opt-in rate; that is, 98% of the students in the program keep their purchased course materials from day one through the date of census. We feel that as the TCC Plus program grows, we will have much more measurable impact on student success.

Appendices

Appendix A

TCC plus – Initial cross functional team			
Area	Individual	Team responsibility	Job function -TCC
Leadership	Dr. Mark McClendon	Co-chair	CFO – Vice Chancellor Finance
	Dr. Tyson McMillan	Co-chair	JCC Chair Emeritus, Professor
Finance/Auxiliary Services	Mike Herndon	Purchasing /Team	Purchasing Manager
	Ray Allison	Administrative	Auxiliary Contract Specialist
	Lisa Waller	Coordination	Analyst – Administration Support
Campus Presidents Representative	Dr. Bill Coppola	Connection to Presidents	South East Campus President
Financial Aid	Samantha Stalnaker	Financial Aid Representative	Assistant Director Financial Aid
Dean Representative	Linda Wright	Academic Deans	NE Campus
	Dr. Solomon Cross,		TCC Connect
Business Services	Sherry Heffner	Business Services	Manager District Services
JCC/Faculty Representative	Dr. Tyson McMillan	JK/Faculty Representative	Professor
	Mr. Steve Smiley		Instructor, JCC Chair -Elect
	Dr. Shereah Taylor		Professor
Academic Affairs	Dr. Nancy Curé	Academic Affairs	Assoc Vice Chancellor
			Academic Affairs
Diversity	Andrew Duffield	Diversity	Chief Diversity Officer
IT/LMS	Vicki Hutto	IT/LMS Representative	Director of Application Development
Institutional Intelligence & Research	Dr. Rosemary Reynolds	Institutional Intelligence & Research	Dir. of Institutional Research
	Dr. Holly Stovall		Director of Research
CIE Representative	Dr. Robert Munoz	CIE Representative	Vice President of Community & Industry Education TR Campus
Corporate Solutions	Jennifer Hawkins	Corporate Solutions	Dir. Corporate Services
Student Advising	Sharon Moore	Student Advising	Assistant Director of Student Learning Materials
Communications	Mr. Reginald Gates	Communications	Vice Chancellor Communications & External Affairs

Appendix B

Faculty – Early adopters				
No.	First name	Last name	Campus	Teaching area
1	Penny	Cypert	NE	Information Technology/Computer Science
2	Charles	Desassure	SE	Information Technology/Computer Science
3	Regina	Cannon	SE	Business
4	Randy	Jackson	CN	Business Administration – Management
5	Tim	Park	CN	Business
6	Shelli	Hull	SO	Chemistry
7	Mark	Eley	TR	Chemistry
8	Steve	Smiley	NW	Information Technology/Computer Science
9	Tyson	McMillan	TR	Information Technology/Computer Science
10	Nosratallah	Nezafati	SE	Information Technology/Computer Science
11	Shereah	Taylor	SO	Education
12	Kirk	Adams	SE	English
13	Stacy	Stuewe	NE	English
14	Kathy	Quesenbury	SE	English
15	Leigh-Anne	Regenold	NE	Government
16	Jennifer	Heth	SO	History
17	Lee (Noble)	Snaples	SO	History
18	Shahla	Durany	SO	Information Technology/Computer Science
19	Priti	Patel	SE	Mathematics
20	Greg	Dewhirst	SE	Music
21	Des	Robinson	SE	Psychology
22	Stephen	Brown	SE	Speech
23	Cristina	Sullivan	CN	Speech

Appendix C

District administration approval process	
No.	Description
1.	ACTs select Textbook options
2.	Purchasing get pricing and ISBNs from publishers
3.	Bookstore manage textbook listings and E-book details with publishers
4.	Faculty Opt-in to select desired TCC Plus text from list of CLMs
5.	Campuses (VPAAs/Deans/Chairs) look at opt-in list and build sections
6.	Business Services attach fee information
7.	Section builders attached notes and custom price details and click TCC Plus designation checkbox.
8.	Students register for TCC Plus classes as part of the wider system.

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Part III
Evidence-Based Outcomes in Inclusive Access and Open Eduational Resources Programs

Chapter 10
University-Wide e-Text Adoption and Students' Use of, Preferences for, and Learning with e-Textbooks

Serdar Abaci and Joshua Quick

Introduction

The growing trend of e-textbook adoption in higher educational institutions in the last decade has sparked a corresponding interest on the efficacy and utility of e-texts for student learning and performance. Much of the discussions of e-texts have centered on the comparative effect of electronic and printed text mediums [15, 20]. This structuring of the narrative, however, tends to overshadow the pertinent discussion on how students and instructors interact with e-textbooks as part of their learning and teaching practices. Indeed, the constraints and affordances of printed versus electronic textbook mediums are exceptionally dynamic and rely on a variety of factors that impact comprehension and learning with texts such as the learning and instructional design and tasks in which the text is used [17]. As such, there is substantive need to reframe the discussion of e-texts to incorporate the variety of perspectives and factors that impact how and when e-texts are used within higher educational settings.

Investigations that have focused on the use and adoption of e-text tools have largely discussed the impact of student use of e-texts generally or in terms of specific features on student performance and grades. For example, Junco and Clem [10] identified positive relations between various e-text feature uses (e.g., page views and annotations) and student score performances. Similarly, Van Horne et al. [19] examined the time to adoption of specific markup and annotation tools. Their findings indicated that students were less likely to adopt annotation tools as time within the semester progressed and that students' perception of their performance and time

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of use were indicative of their actual use. Van Horne et al. also identified a positive relationship between annotation use and student performance. In our previous institutional case study of e-texts at Indiana University, we found suggestive, descriptive relationships between student and instructor use of e-texts and overall class performance [1]. Both Van Horne et al. and our case study have identified substantive gaps in scaffolding and supporting student use of e-texts through lack of early structure and support.

This gap in scaffolding and support is suggestive of apparent disconnects in student and instructor aims and expectations of e-texts within higher education. Schuh et al. [16] identified that students are unlikely to use the features intended to support their learning without specific aims and purposes, which are generally framed and elaborated upon by the instructor. Similarly, they also identified that instructors' tendency to use e-texts was generally without specific aims or expectations.

Student interaction with these tools, then, is a function of both the instructors' appropriately structuring e-textbook activities and modeling productive uses of the tool for their learning and the extent to which higher education institutions support instructors' capacity to use such tools. The extent to how these interdependencies manifest within an institution, however, remains largely unexplored. Indeed, many of the extant studies of student preferences with e-texts have been constrained to a single or small set of classes with a low number of student participants (see [4, 9, 11, 18]). As such, the impact of institutional adoption of e-texts remains largely unexplored.

An additional consideration in students' use of any tool is the more general construct of student engagement. Engagement in and of itself represents a multidimensional construct incorporating cognitive, affective, physical, and social processes [7], which has resulted in a conceptual "haziness" around the concept of engagement [14]. Furthermore, institutional commitments and support of student and instructors' involvement in educational processes and resources also influence the ways in which learner engagement can afford [12, 13]. Consequently, an analysis of students' preferences and use of tools for their learning is not only an interaction between instructors' pedagogical decisions with the tool and students' individual learning processes but also institutional structures and systems intended to facilitate teaching and learning with technology.

The systemic interdependencies of tool use, then, inform this chapter by focusing on the various dependencies within and across institutions that have adopted e-texts. Further, investigations into students' adoption and preferences of e-texts within and between institutions have been conducted in institutional contexts in which there has been little to no systemic institutional support [2, 3]. Consequently, this chapter explores the differences in student adoption and preferences from institution-wide perspectives in which an institution supports inclusive, first-day access of e-texts for all students in courses that have entered the initiative.

Indiana University e-Textbook Program

The context of this chapter is primarily centered on Indiana University's e-text program, which is an institution-wide program intended to enable access to educational materials for all students. Indiana University's e-text program was developed and implemented in 2009 with four principle aims: (1) drive down the cost and materials for students, (2) provide high-quality materials of instructor's choice, (3) enable new tools for teaching and learning, and (4) shape and structure sustainable models of educational materials that work for students, faculty, and authors. To date, e-text adoption use and application within Indiana University has steadily grown to institutional levels of adoption and integration. The function of the program to provide systemic, institutional support to instructor and students has resulted in agreements with many publishers. These agreements enable students to access their texts for their entire career at Indiana University and supports access across multiple devices and offline use of e-texts. Figure 10.1 and Table 10.1, respectively, describe the overall and cumulative adoption over time of descriptive trends of e-text use within Indiana University.

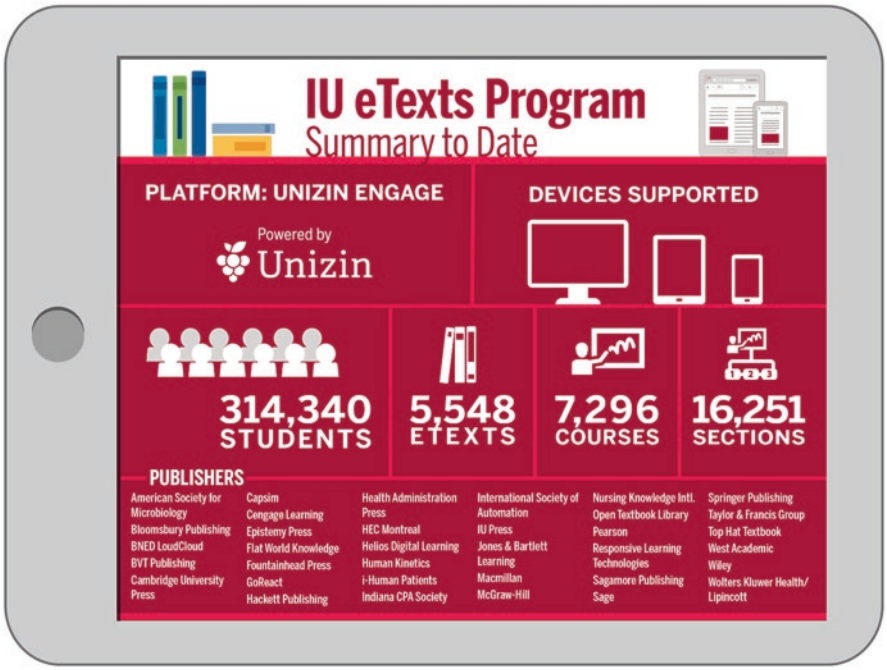

Fig. 10.1 Snapshot summary of e-text program at Indiana University

Table 10.1 Change in e-text adoption over time at Indiana University

	2012	2014	2016	2018
Courses	328	1,166	2,279	7,296
Adoptions[a]	690	1,751	2,590	5,548
Students	12,251	24,290	48,814	88,867

[a]"Adoptions" refer to the single-course item (e.g., digital book) and a section may have one or more

Research Questions

As there are apparent gaps within higher educational contexts and students' perceived and actual use of e-texts based on their understanding and integration into structured educational aims, we sought to address this gap from an institutional perspective in order to understand the extent to which students at our institution perceive e-texts as impactful for their learning. We therefore sought to answer the following three questions:

1. How do students use e-texts?
2. How do students' preferences for textbook features relate to e-textbook use?
3. How do students' perceived learning relate to their use of interactive annotation tools?

Methods

Data Source

The data for this study came from the administration of the e-textbook question set at Indiana University. This question set was adapted from the 2018 administration of the National Survey of Student Engagement (NSSE). NSSE annually collects information from hundreds of four-year colleges and universities about first-year and senior students' participation in programs that institutions provide for their learning and development. NSSE was designed to measure the time and effort that students invest in activities shown to be related to positive learning outcomes. NSSE 2018 was administered at 511 institutions across the United States and Canada resulting in responses from 289,867 students. A subset of 34 participating NSSE institutions received an additional item set asking students about their use and perceptions of e-textbooks. We use the results from our previous analysis of the NSSE data [2] as comparative measures to the data collected from Indiana University.

Participants

Of the 284 students in this study, around one in four (26%) were first-year students, compared to one in three (29%) being senior and others as sophomore and juniors. Overall, two-thirds of students (69%) used e-textbooks in two or more of their classes, with around a quarter (27%) using an e-textbook in one course and only 11 students (4%) not using any e-textbooks in their courses. Of the students that did not use an e-textbook, one-third of them (36%) reported this was because they preferred a print textbook. One in five students (18%) did not have a course that required a textbook, and about half (46%) had a textbook that was not available as an e-textbook. Half of all responding students (51%) preferred using a print textbook with one-third (37%) preferring an e-textbook and the remaining (12%) having no preference.

The largest academic program groups observed at Indiana University involved participants enrolled in Business, Economics, Accounting, and Management programs. The other prevalent respondent enrollment groups were followed by Public Health and Medical Professions and Social Science programs (29.9%, 11.3%, and 7.7% of respondents, respectively). The majority of students also earned As or Bs (n = 257, 90.5%). Most of our respondents from IU identified as female (n = 185, 61.1%), while only 76 (26.8%) identified as male. Five respondents preferred not to indicate their gender identity. For additional respondent demographics and student characteristics, see Table 10.2.

Measures

To address our three research questions, we examined the following metrics through the administration of the survey. First, respondents of the survey were asked to identify their frequency of classes that adopted e-texts regardless. Second, items asking students to identify factors that were pertinent to their adoption and use of e-texts at Indiana University as well as their preferences for printed or electronic mediums. Finally, we asked students several items on their perceived learning and use of e-text features such as annotations, keyword search, and interaction with other students or their instructors with e-texts. Specific items were used to construct an *e-text learning* score. This score was computed from items asking respondents how much the e-text contributed to their understanding of the course material, studying or completing coursework on their own, and completing coursework with other students.

Table 10.2 Summary of participant demographics

Demographic	Category	n	%
Study major	Arts and Humanities	9	3.2
	Bio Sciences, Agriculture, Natural Sciences	11	3.9
	Math, Statistics, and Computer Sciences	27	9.5
	Social Sciences	31	10.9
	Business, Economics, Accounting, and Management	85	29.9
	Communication, Media, and Public Relations	22	7.7
	Education	6	2.1
	Engineering	4	1.4
	Public Health and Medical Professions	32	11.3
	Social Service Professions	4	1.4
	All other	10	15.1
Grades	Mostly A grades	155	54.6
	Mostly B grades	102	35.9
	Mostly C grades or lower	10	3.5
Transfer student		212	74.6
Enrolled full time		250	88.0
Gender identity	Male	76	26.8
	Female	185	65.1
	Prefer not to respond	5	1.8
Age	19 or younger	38	13.4
	20–23	174	61.3
	24–29	23	8.1
	30 or older	27	9.5
Racial/ethnic background	American Indian or Alaska Native	2	0.7
	Asian	26	9.2
	Black or African American	17	6.0
	Hispanic or Latino	11	3.9
	White	183	64.4
	Multiracial	15	1.4
	Other	4	1.4
	Prefer not to respond	7	2.5
Class standing	Freshman/first year	73	25.7
	Sophomore	46	17.3
	Junior	52	18.3
	Senior	83	29.2
	Unclassified	9	3.2

Data Analysis

Our analysis of Indiana University data was adopted from our previous study on student preferences and e-text use across higher education institutions using NSSE data (see [2]). Descriptive analyses were used to determine the use and adoption of

e-texts by Indiana University students. In order to determine the impact of students' preferences for e-text features on their adoption of e-texts, we conducted independent t-tests and computed Cohen's *d* effect sizes to compare the importance of textbook features between students who prefer printed or electronic mediums. Finally, to address our third research question, we collapsed student feature use to frequent (i.e., responded with either very much or quite a bit of use) and infrequent (i.e., responded with some or very little use) and conducted independent t-tests with Cohen's *d* effect sizes to compare students' perceived impact of frequent versus infrequent use of e-text features on their learning scores.

Results

We compared our findings from Indiana University to our previous investigation into other e-textbook adopting institutions in order to identify differences in faculty-led versus institutionally-supported adoption [2].

How Do Students Use e-Texts?

Many of IU's responders perceived that most of their time spent in a class was on assigned reading, regardless of the medium. Over half (n = 174, 60%) of respondents indicated that they spent at least half of their average class time per week on reading assignments. Nearly half (n = 138, 48%) of responders indicated they did not frequently use the keyword search features with IU e-texts, while 40% (n = 114) indicated frequent use of the search function. The majority of responders indicated they frequently used annotation features such as bookmarks (n = 208, 73%), highlights (n = 170, 59%), and notes (n = 215, 75%). Similarly, the majority of respondents indicated that they frequently used e-texts to interact with other students (n = 201, 70%) and send their instructor questions (n = 216, 76%). These reports, however, must be taken into account with our previous analyses of students' interactions with e-texts at Indiana University (see [1]) where we found the use of the question features as the least used function of e-texts. Students also reported frequently downloading (n = 208, 73%) and accessing additional online resources (n = 208, 73%). Relatively fewer students (n = 165, 58%) indicated they frequently used e-texts for self-assessment purposes.

Interestingly, the NSSE results reported in our previous study indicated students perceived using the keyword search more frequently. A larger proportion reported using e-texts for self-assessment, highlighting, and accessing online resources. Fewer NSSE responders indicated they used e-texts for note-taking, sending the instructor questions, and interacting with other students.

How Do Students' Preferences for Textbook Features Relate to e-Textbook Use?

Similar to our previous findings with the NSSE survey, the largest difference for students' preference was a stronger preference for e-textbook users to use keyword search function of e-texts ($p < 0.001$, $d = 1.07$). Other relevant differences in preference were due to cost ($p < 0.001$, $d = 0.51$) and instructor highlights ($p < 0.001$, $d = 0.62$). Like our larger NSSE study, print textbook users found it more relevant to be able to sell back books ($p < 0.001$, $d = 0.43$). However, no significant differences in preference between print and e-textbook users was observed for offline access ($p = 0.469$). Similarly, no significant differences were observed in students' preferences due to the ability to make or see each other's annotations ($p = 0.468$) or first-day access ($p = 0.098$).

How Do Students' Perceived Learning with e-Textbooks Relate to the Use of Interactive Annotation Tools?

In general, students who more frequently used interactive e-text features perceived greater benefits to their learning at Indiana University. The frequency of students' taking notes had substantial impact on their perceived learning ($p < 0.05$, $d = 1.01$). Similarly, participants' intensity of using e-text interactively, such as web-based features like hyperlinks ($p < 0.001$, $d = 0.84$), highlights ($p < 0.01$, $d = 0.76$), bookmarks ($p < 0.01$, $d = 0.63$), self-assessment processes ($p < 0.001$, $d = 0.87$), asking their instructor questions ($p < 0.02$, $d = 0.91$), and the frequency of interacting with other students ($p < 0.05$, $d = 0.71$), had a moderate impact on students' perceived learning. Interestingly, frequency of using the keyword search feature had a less pronounced effect ($p < 0.01$, $d = 0.38$). Finally, intensity of downloading or printing texts did not have a significant impact on students' perceived learning ($p = 0.148$). This finding is in line with our previous results from our NSSE study, though the intensity of downloading or printing e-texts was found significant in the larger study.

Discussion

While student perceptions of their learning are not the complete picture, these results do suggest that there was a tendency for students to perceive positive benefits to using e-texts for their learning. Interestingly, similar findings were provided by both the results from the NSSE survey, where responding institutions tended to have more faculty-driven adoption and support of incorporating e-texts, and Indiana University's application of institutional support for e-texts. The question, then, is what factors are contributing to students perceived learning and use of e-texts?

A likely explanation for this is the influence and impact of instructor scaffolding and modeling of e-text activities to support their students' learning. The support for instructor activities with e-texts and the deeper impact on student learning has been shown to provide some promising avenues for students to incorporate the tool into their learning practices [1, 8, 16]. Therefore, the questions regarding further support and impact may well be due to providing faculty with adequate support in developing their pedagogy with tools such as e-texts. Future work should seek to address how this connection can be successfully enabled.

It is also interesting that students in both our Indiana University study and the larger NSSE study perceived benefits of using the e-text interactive features to their learning. This is interesting in the context of a larger discussion on the effects of digital content tools on students' learning processes. Despite the increased prevalence of digital mediums for content delivery, many studies are suggestive of the benefits of paper texts. Delgado et al.'s [6] meta-analysis review of reading comprehension suggested small positive effects to reading comprehension when using paper mediums. Small benefits were also observed in a similar meta-analysis conducted by Clinton [5].

While it is beyond the scope of this chapter to evaluate these studies, it should be noted that the gains of using a printed versus paper text should be weighed against a dynamic system of factors. These factors can range from the nature of the reading task, the pedagogical and learning designs, and the affordances and constraints of the tool being used within a particular context. Therefore, it is probably more appropriate to determine **how** rather than **whether** e-texts should be used to further teaching and learning. Future work should therefore seek to examine the ways in which the tool interacts with the dynamic system of a classroom.

Finally, it should be reiterated that student perceptions of the tool are not the complete picture. Rather, they are necessary for informing examinations into how e-text use can be framed to coincide with teaching and learning processes within and between particular teaching and institutional contexts.

Conclusion

Student perceptions of e-texts on their learning suggest that students see some benefit of using these tools. It remains to be seen, however, whether these tools' application to learning and teaching processes matches with these perceptions. This fact suggests several avenues for future work. First, investigations into the correspondence between student perceptions and their actual learning processes should be conducted. Similarly, examination into instructor perceptions of their use of e-texts impact on their teaching and their student learning and these factors' relation to the actual processes of teaching and learning would provide new insights into warranted use of e-text and related tools. Lastly, combining these approaches into a more systemic analysis of digital content tools would be beneficial for understanding when and why e-texts and related tools are helpful for teaching and learning.

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Chapter 11
Student e-Textbook Engagement and Performance Outcomes

Adrian Guardia, Robert Vinaja, and F. I. Waggoner

Introduction

The notion that the greater one invests in acquiring knowledge, the more likely one is to succeed is a universally accepted axiom. Nevertheless, we should ask the question: The more…what? Time, money, effort, or something else? When it comes to students reading e-textbooks, that question becomes even more complex. Students read their textbooks occasionally or not at all [1]. Many students report reading their textbooks fewer than 4 h per week [2, 3]. A major objective for instructors is getting students to read. The quality of engagement during reading time is important. Therefore, one of the objectives of this study is to determine if e-textbooks can increase reading engagement and consequently improve academic performance. This study considers factors related to engagement and the role of learning analytics in reading engagement.

Getting Students to Read

Prior research has identified factors that lead students in their decision not to read. These factors fall into three categories. The first category relates to student attitudes. For example, students may lack motivation, have low self-confidence [4], underestimate the significance of the required reading [5], or lack of interest in the topic (when students consider the topic boring or meaningless) [6]. Another category

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relates to student preparation. Some students lack effective study habits [4] or find the required reading too challenging [6]. The next category relates to relevance. Students may suspect a lack of congruency with course objectives [4]. Students are unlikely to read if the instructor seldom refers to the textbook or does not include the reading material in exams [6].

Indeed, the main factor cited in research studies is time. Competing demands on students' time limit the available time for study [4]. The most cited reason that students are unable to complete assigned reading is their commitment to work [21]. Many students, especially nontraditional students, work full-time or part-time jobs and have many responsibilities. Some students are overly optimistic regarding their ability to handle the time demands of both work and academic responsibilities [6]. Other secondary factors are family pressures [4], social events [7], and personal issues. These factors not only limit reading time but also leave the student with little to no energy to study [4].

The Role of Substitutes

Another reason that students do not read textbooks is that they use textbook substitutes. Many students do not see a need to read the textbook [8]. In some cases, students do not read because they think that they can grasp the content just by attending class [9]. Instructors magnify this problem when they do not refer to the required textbook during their lectures [10]. In these cases, instructors' assessments of student learning are primarily based on the content they provide or at least emphasize in lectures [11]. Moreover, when the quality of the lecture is outstanding, students can learn from the lecture even if they do not read. In other words, the quality of instruction can "negate" any potential benefits of textbook reading [12]. Other students believe that the instructor is responsible for highlighting the key concepts from the textbook and thereby pinpointing which sections of the textbook will inform an exam [8]. In one study, students reported that listening to the lecture, taking notes, and reviewing those notes were more effective contributors to high grades than reading the textbook [2]. Another study confirms that most students believe that they can learn effectively by reading slides while listening to the lecture [1]. Studies also show that students prefer slides to textbooks for exam preparation. Students are unlikely to read the textbook if they believe that they can do well on exams by reviewing just the lecture notes and slides [13]. However, slides are a presentation aid and only provide a simple outline. Students who only study from slides do not study the rest of the textbook content [14]. In some cases, even online learning tools like Applia, Mindtap, or Mastering, which are meant to be textbook complements, can become textbook substitutes [6].

The Role of e-Textbooks

Many studies have tried to compare the advantages of e-textbooks. The advantages most frequently cited include choice, cost, flexibility, convenience, and environmental benefits [15]; time savings, accessibility, the ability to search specific words [16]; the ability to add bookmarks, tags, notes, and highlighting; and the ability to submit questions to the instructor directly from the e-textbook [17]. E-textbooks provide extra learning resources such as quizzes with instant feedback, music, video, and narration [18]. E-textbook portability might increase both textbook coverage and content mastery [19]. One of the essential advantages of e-textbooks, as related to this study, is that e-textbooks facilitate data collection of students' reading habits.

On the other hand, e-textbooks have limitations. Complaints include slow loading, poor readability (screen reading eye strain), lack of resale value, purchasing process issues [18], digital rights management issues (download/copy/print restrictions), and platform problems (interface, usability, functionality) [20]. Some researchers suggest that the benefits of e-textbooks are not significant enough to offset its drawbacks [21]. E-textbook reading deterrents include technical frustrations with e-textbooks and the potential distraction of the Internet [22]. Students tend to use e-textbooks to search for specific words, but not for reading many pages or over long periods [23].

Other studies on student achievement have found no significant difference in academic performance or differential learning when comparing e-textbooks and print books [21, 22, 24]. Students prefer an e-textbook for searching and quick lookups, but prefer a printed textbook for longer sessions of reading [21]. In another study, many respondents preferred the versatility of a combination of both a print textbook and an e-textbook [22]. However, some experts think that what is most important is not the textbook delivery method but, rather, "getting students to read in the first place" [25]. For e-textbooks to be effective, they must overcome the deterrents to student reading. In other words, unless e-textbooks can address the reasons that students choose not to read, they will provide little improvement over print textbooks. Why would we expect students to read more frequently from an e-textbook unless it can overcome their reasons for not reading in the first place?

The Challenges of Measuring Time

Many studies have explored the relationship between reading and academic performance. These studies have measured the independent variables by using student self-reported measures. Studies in the literature can be classified into two categories: studies that measure student preferences and self-reported use and studies that relate these measurements to academic performance [12].

In one of the earliest studies on textbook usage [26], the authors attempted to measure reading time unobtrusively. Before the start of the semester, they placed glue seals between the pages. At the end of the semester, they estimated the number of pages read by counting broken page seals. Despite their attempts to measure student engagement with textbooks in an anonymous manner, the researchers measure quantity rather than quality of time. As discussed above, the limitations of time operationalization may be the cause for mixed results about the impact of time on academic performance [27].

Given the difficulty of direct and unobtrusive measurements of study time and engagement, most research studies have resorted to student self-reported measurements like questionnaires, surveys, or journals. Some measurement methods use a retrospective survey where students report their study time. In one study, students self-reported reading the textbook up to two times per week [14]. In other studies, students reported how they spent their time in a typical week [28], the percentage of the total amount of reading they completed [12], and the activities they performed while they read the textbook [3]. Other studies have used surveys with questions about reading the textbook outside of class [19], reading habits, reading time, anticipated course grade [29], the specific time of the day when they typically do the assigned reading, and metacognitive reading strategies [2].

However, retrospective questions related to a long semester rely on student memory and carry the risk of arbitrary or inaccurate estimates [30]. Other studies, instead of asking retrospective questions, try to achieve more accuracy by asking students to keep records; for instance, students can track their reading engagement over the course of a week or longer. In one study, students recorded their reading times, the number of pages read, locations, mood, and reading strategies in a journal [13]. Other studies required students to keep compulsory semester-long logs that counted as part of the grade. Students recorded what percentage of the assigned reading they had "thoughtfully read" before class [6], or the weekly time spent on self-study activities [27]. Students also reported to what extent they had applied specific learning strategies [30].

The journal approach also has limitations. Keeping a journal for an extended period, such as an entire semester, involves significant work for the student. If, instead, students only keep a journal for a shorter period, such as a single week, the data may not be representative of the entire semester because students tend to spend more time reading in the weeks before major exams [27, 30]. Concurrent measures of reading could become obtrusive or disruptive and distract students while they read [31]. In addition, self-reported behaviors may not correspond to actual behaviors [32]. Some students could report inflated scores or deny the fact that they did not read enough because they may fear that reporting insufficient reading will adversely affect their grade in the course. One study [14] suggested that among those students who did not read, some reported their time honestly, while others may have intentionally reported misleading records to comply with expectations. Other students may fail to adjust the estimate to account for inefficient use of their time.

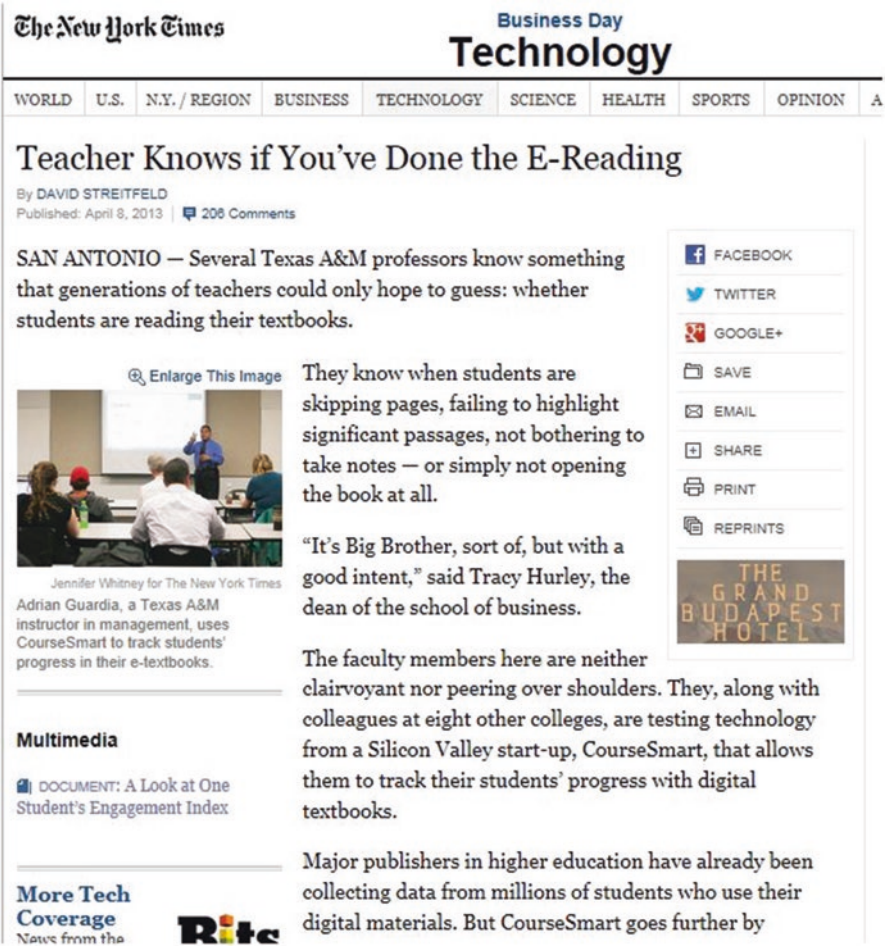
Early attempts at unobtrusive studies on the use of e-textbooks also suffer challenges such as the subjectivity of the evidence. Similarly, one of the first studies of e-textbook usage used an anonymous questionnaire about e-textbook reading habits [33]. However, a questionnaire can only return subjective information. An alternative to such methods could be e-textbook analytics, which are more objective than past subjective methods, even with the limitations discussed in this study. One significant advantage is that an e-textbook log provides more accurate reading effort estimates than the measurements based on self-reported methods used in previous studies.

Quality Versus Quantity

Although previous research has thoroughly investigated the relationship between study time and academic performance, the results provide mixed findings because little research has considered whether that study time was used effectively. Many studies focus on the quantity of reading time as a predictor variable. However, measuring the quantity of reading time is not enough; rather, the quality of reading time must also be examined. Indeed, many studies only ask whether students read, not *how* they read or how much they learned from their reading [34]. In fact, many studies have just measured quantity metrics such as read time and number of pages read, instead of also including quality metrics such as highlights and underlines. Of course, quality is more difficult to measure than quantity, but some researchers have tried to estimate quality by using aptitude measures [11].

Thus, whereas additional quantity of time spent reading does not necessarily result in improved performance [28], quality usage of time is a moderator variable that affects the relationship between study time and performance. Time quality is determined by the learning activities used while studying [30]. Students should work "smart," not just "hard" [35]. Time should not be wasted but should be used more efficiently. What matters is not how many pages students read but which pages they read, not how many minutes they spent reading but what they did during those minutes and whether they used effective reading techniques.

Existing research shows that students read for limited amounts of time, and when they read, they lack comprehension because they seldom use meta-cognitive reading strategies. Several studies demonstrate the positive effects of reading strategies. Active readers not only read the text but also use strategies [36]. These strategies include underlining, highlighting, note-taking, outlining, summarizing, self-questioning [3], and comparing the reading with class notes [29]. The interaction between study time and strategies improves the prediction of academic performance. For that reason, this study measured other variables in addition to time to capture engagement quality (Fig.. 11.1).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Teacher Knows if You've Done the E-Reading

By DAVID STREITFELD
Published: April 8, 2013 | 206 Comments

SAN ANTONIO — Several Texas A&M professors know something that generations of teachers could only hope to guess: whether students are reading their textbooks.

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Enlarge This Image

Jennifer Whitney for The New York Times
Adrian Guardia, a Texas A&M instructor in management, uses CourseSmart to track students' progress in their e-textbooks.

They know when students are skipping pages, failing to highlight significant passages, not bothering to take notes — or simply not opening the book at all.

"It's Big Brother, sort of, but with a good intent," said Tracy Hurley, the dean of the school of business.

The faculty members here are neither clairvoyant nor peering over shoulders. They, along with colleagues at eight other colleges, are testing technology from a Silicon Valley start-up, CourseSmart, that allows them to track their students' progress with digital textbooks.

Major publishers in higher education have already been collecting data from millions of students who use their digital materials. But CourseSmart goes further by

Multimedia

DOCUMENT: A Look at One Student's Engagement Index

More Tech Coverage
News from the

Fig. 11.1 Newspaper article

Study Background and Methodology

The authors have used e-textbooks for more than 12 years with high success. The university featured in the study has implemented an e-textbook program with the collaboration of the leading textbook publishers. Figure 11.2 features a newspaper article related to the program.

During the time of this study, the institutional e-textbook program used the CourseSmart[1] platform. CourseSmart implemented a comprehensive analytics

[1] Note: VitalSource (Ingram Content Group) purchased CourseSmart in 2014; all content was migrated to VitalSource by 2015.

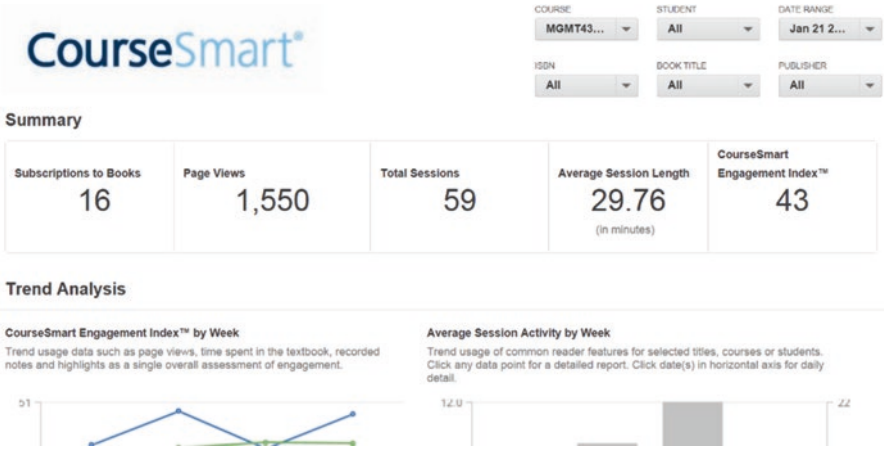

Fig. 11.2 CourseSmart dashboard

system that tracked reading behavior. The CourseSmart analytics system tracked the number of pages read and time spent, among other indexes, and calculated a composite engagement index.

The purpose of this study was threefold. The first objective was to study the relationship between student e-textbook engagement and performance outcomes. Second, this study attempted to assess the relationship between the number of pages viewed, average session length, and quiz scores. Finally, this study tried to determine the relationship between the number of pages viewed, session length, engagement index, and student demographics. The primary goal was to identify a causal relationship between e-textbook engagement and student success.

The research questions for the study surround the thoughts to determine if simulations, dashboards, and mobile access provide benefits, enhance knowledge, and improve decision making. The following research questions guided the study:

1. Is there a relationship between the number of pages a student reads and assessment outcomes (quizzes, semester performance)?
2. Is there a relationship between the duration of reading and assessment outcomes?
3. Is there a relationship between number of pages read, reading duration, and student gender or age?

The present study uses quizzes to measure performance. Previous studies suggest that quizzes are a common practice that can increase reading compliance [4, 7, 24]. Both instructors [5] and students [19] identify quizzes as a motivational tool to encourage students to read. Students like quizzes because they are directly related to grades and give students partial control over their final grade [5]. Students also prefer announced quizzes to unannounced quizzes. However, quizzes should not be the only reading compliance strategy [34] because they have some shortcomings. Students can potentially view quizzes as punitive measures [19]. If students can use an e-textbook during the quiz, there is a risk that students never read the e-textbook

and only use it during the quiz. In this case, the quiz could become just an exercise of "play hunt and paste" [6, 13]. Quizzes may motivate reading, but they may fail to promote an intrinsic interest in the topic [37].

During the class under study, students were required to take three quizzes each. Quiz scores for the pilot group represented the closest assessment we could make to e-textbook engagement and student outcomes. The quizzes were all open e-textbook and notes. The quizzes were 60-min long and included 20 multiple-choice questions directly from the e-textbook. This research design has some extraneous variables, but of all other student course assessments, it comes closest to a one-to-one relationship.

The participants of the study comprised undergraduate students from the College of Business at a 4-year public university. The study included students from three courses. The population consisted of 73 undergraduate students. The resulting sample studied consisted of 52 students to include a 71% participation rate.

The independent variables were CourseSmart Engagement index, the number of pages read, the number of reading events, and the average session length. The dependent variables were quiz scores and semester grades. The independent variables were measured on every quiz date:

- reading minutes for a specific date (3 snapshots that correlate to quiz date)
- reading pages for a specific date (3 snapshots that correlate to quiz date)
- student engagement index for a specific date (3 snapshots as well)

The null hypotheses examined are provided in Table 11.1.

Table 11.1 Hypotheses in the study

Hypotheses
1. There is no relationship between the engagement index and quiz scores.
2. There is no relationship between number of pages read and quiz scores.
3. There is no relationship between number of reading events and quiz scores.
4. There is no relationship between the average reading time per reading event and quiz scores.
5. There is no relationship between the engagement index and final semester grade.
6. There is no relationship between the number of pages read and final semester grade.
7. There is no relationship between the number of reading events and final semester grade.
8. There is no relationship between the average reading time per reading event and final semester grade.
9. There is no relationship between the engagement index and gender of the student.
10. There is no relationship between the number of pages read and the gender of the student.
11. There is no relationship between the number of reading events and the gender of the student.
12. There is no relationship between the average reading time per reading event and the gender of the student.
13. There is no relationship between the engagement index and the age of the student.
14. There is no relationship between the number of pages read and the age of the student.
15. There is no relationship between the number of reading events and the age of the student.
16. There is no relationship between the average reading time per reading event and the age of the student.

Many previous studies have obtained data by using in-class surveys. Some studies used anonymous surveys. They also obtain usage statistics data from the e-textbook system log [16, 17]. Study/reading time is a typical independent variable by computing the time between login and logout. Several studies use multiple linear regression analysis to develop a model for predicting academic performance based on reading time [38].

Analysis and Discussion of Results

The data was analyzed using SPSS. The analysis of student demographic characteristics in Fig. 11.3 shows that most students were in the 20–30 age range. Figure 11.4 shows that the majority of students were female. There were no significant differences in performance across age or gender groups.

The variables were measured at the same time as each one of the three quizzes were administered during the semester. A box plot was used to identify differences. Both the box plots and the ANOVA analysis found no significant differences. For instance, Fig. 11.5 shows a box plot of quiz scores; there was no significance difference in the quiz grades. Figure 11.6 shows a box plot for the e-textbook engagement index. While the average index was slightly lower at the beginning of the semester, there was little change from one quiz administration to the next.

The correlation matrix in Table 11.2 shows significant high correlations between the quiz scores and the semester grade. There are also significant high correlations between the number of page views and the average session length. The correlation

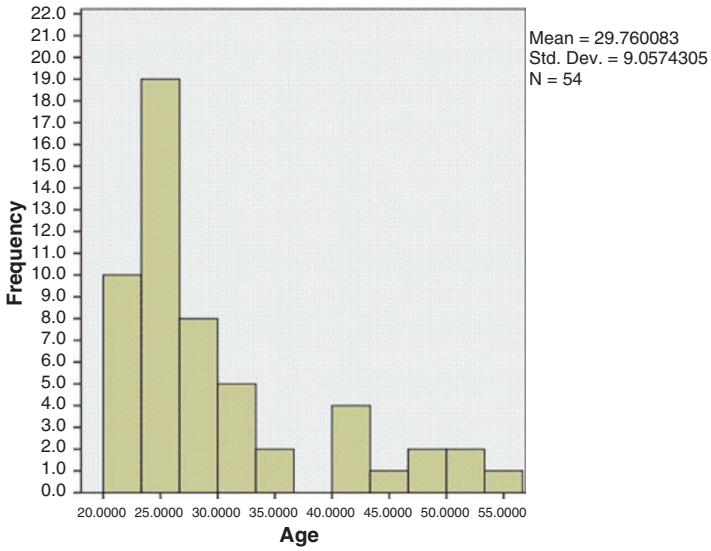

Fig. 11.3 Student demographics (age)

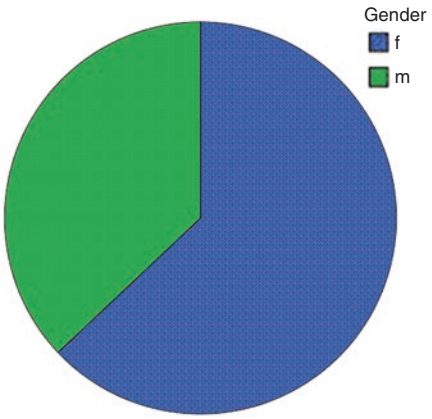

Fig. 11.4 Student demographics

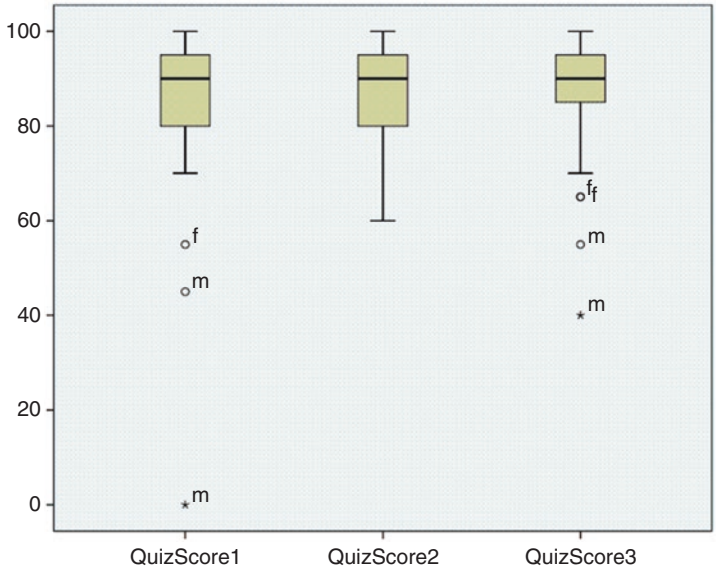

Fig. 11.5 Quiz score box plot

between the independent variables (engagement) and the dependent variables (performance) was statistically significant, but moderate (less than 0.40).

The number of pages read (page views) steadily increased over the semester. Figure 11.7 shows how the average page views increased from 134 (around quiz 1) to 181 (towards the end of semester). The multivariate tests in Table 11.3, the test of within-subject effect in Table 11.4, and the pairwise comparison in Table 11.5 all confirm that the continuous increase was statistically significant.

In a similar way to the number of pages read, all the other independent variables showed a steady increase during the semester. This is positive because it shows that

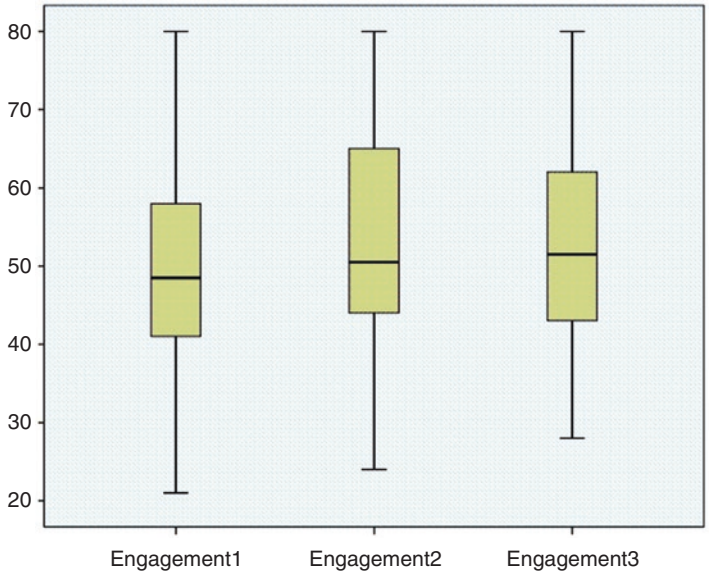

Fig. 11.6 Engagement index box plot

Table 11.2 Correlations

		Session	PageView	SemScore1	SemQuizAvg
Session	Pearson Correlation	1	.663**	.361**	.390**
	Sig. (2-tailed)		.000	.010	.005
	N	50	50	50	50
PageView	Pearson Correlation	.663**	1	.338*	.230
	Sig. (2-tailed)	.000		.016	.108
	N	50	50	50	50
SemScore1	Pearson Correlation	.361**	.338*	1	.600**
	Sig. (2-tailed)	.010	.016		.000
	N	50	50	54	54
SemQuizAvg	Pearson Correlation	.390**	.230	.600**	1
	Sig. (2-tailed)	.005	.108	.000	
	N	50	50	54	57

*Correlation is significant at the 0.05 level (2-tailed)
**Correlation is significant at the 0.01 level (2-tailed)

students became increasingly engaged with the e-textbook as the semester progressed. Figures 11.8, 11.9, and 11.10 show the increase in the means for the engagement index, the session length, and the number of sessions. Nevertheless, there was no significant relationship between the independent variables and the dependent variables (quiz scores and semester grade). None of the null hypotheses were rejected at the 0.05 significance level.

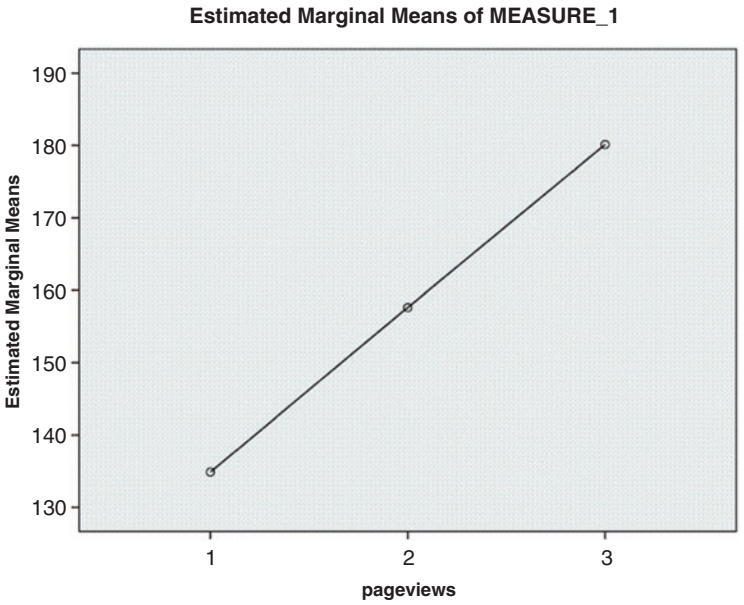

Fig. 11.7 Page views' mean plot

Table 11.3 Multivariate tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta squared	Noncent. parameter	Observed power[b]
Pillai's trace	.156	4.449[a]	2.000	48.000	.017	.156	8.898	.737
Wilks' lambda	.844	4.449[a]	2.000	48.000	.017	.156	8.898	.737
Hotelling's trace	.185	4.449[a]	2.000	48.000	.017	.156	8.898	.737
Roy's largest root	.185	4.449[a]	2.000	48.000	.017	.156	8.898	.737

Each F tests the multivariate effect of pageviews. These tests are based on the linearly independent pairwise comparisons among the estimated marginal means

[a]Exact statistic

[b]Computed using alpha = .05

The Relationship Between Engagement and Performance

In this study, there was a significant, although moderate, correlation between engagement and performance. People generally accept that textbook reading increases learning. The assumption is that content mastery increases with additional reading time [37], regardless of student characteristics. More study time should cause higher performance, and an increased effort should improve grades [1]. Although these assumptions sound intuitive, research into the impact of study time on performance is inconsistent [30] and equivocal [27].

Table 11.4 Tests of within-subject effects

Measure: MEASURE_1									
Source		Type III sum of squares	df	Mean square	F	Sig.	Partial Eta squared	Noncent. parameter	Observed power[a]
pageviews	Sphericity Assumed	51166.920	2	25583.460	5.702	.005	.104	11.405	.855
	Greenhouse-Geisser	51166.920	1.825	28039.577	5.702	.006	.104	10.406	.829
	Huynh-Feldt	51166.920	1.892	27048.349	5.702	.005	.104	10.787	.839
	Lower-bound	51166.920	1.000	51166.920	5.702	.021	.104	5.702	.648
Error(pageviews)	Sphericity Assumed	439679.747	98	4486.528					
	Greenhouse-Geisser	439679.747	89.416	4917.253					
	Huynh-Feldt	439679.747	92.693	4743.423					
	Lower-bound	439679.747	49.000	8973.056					

[a]Computed using alpha = .05

Table 11.5 Pairwise comparisons

Measure: MEASURE_1						
(I) pageviews	(J) pageviews	Mean difference (I-J)	Std. error	Sig.[a]	95% confidence interval for difference[a]	
					Lower bound	Upper bound
1	2	−22.740	11.572	.165	−51.426	5.946
	3	−45.240*	15.161	.013	−82.823	−7.657
2	1	22.740	11.572	.165	−5.946	51.426
	3	−22.500	13.215	.285	−55.259	10.259
3	1	45.240*	15.161	.013	7.657	82.823
	2	22.500	13.215	.285	−10.259	55.259

Based on estimated marginal means
*The mean difference is significant at the .05 level
[a]Adjustment for multiple comparisons: Bonferroni

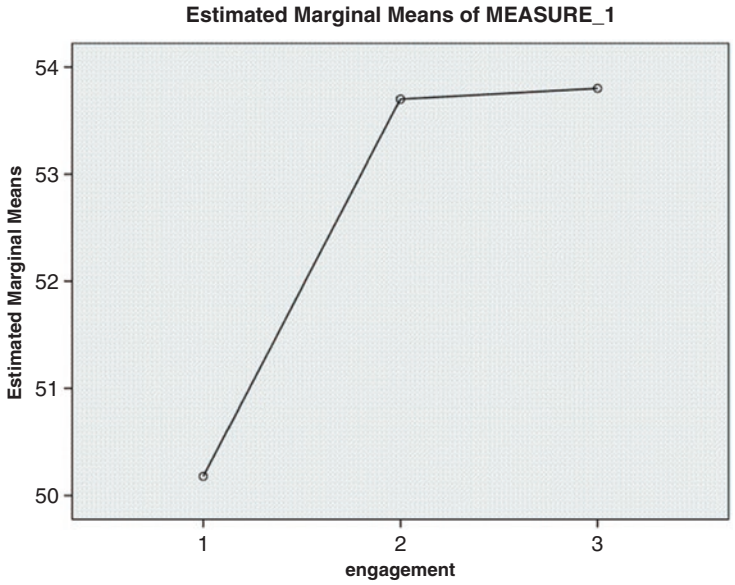

Fig. 11.8 Engagement index mean plot

One study found that more study time predicts better grades, even after considering relevant characteristics. The study affirms that performance is not predetermined by "traits" but by "one crucial controllable variable: study time" [27]. While several studies have found significant positive correlations between reading measures and grade performance, many other studies have not arrived at the same conclusion. One study found no relationship between the amount of textbook coverage and test performance [19], while another study found no correlation between the self-reported reading time and performance [35].

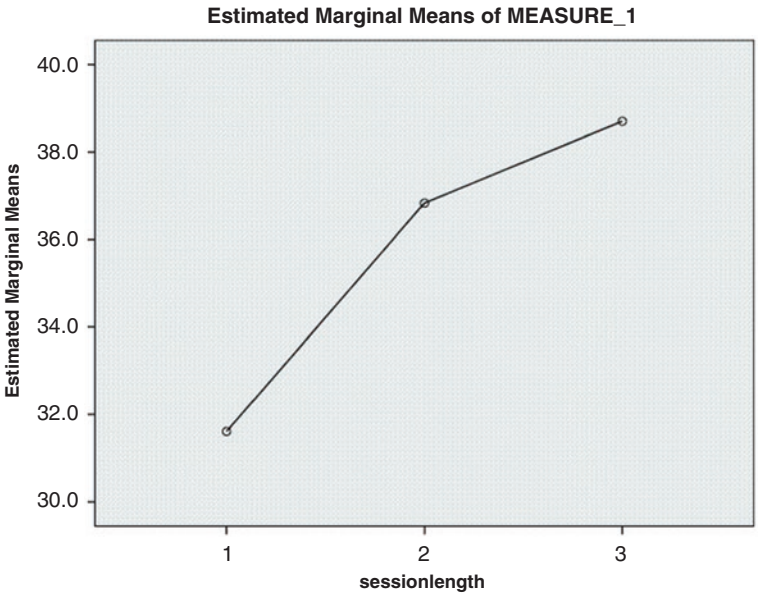

Fig. 11.9 Session length mean plot

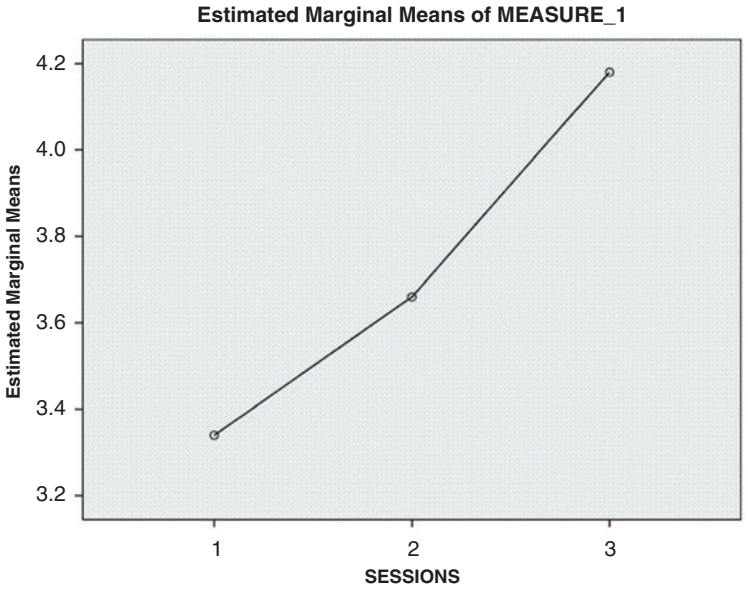

Fig. 11.10 Number of sessions mean plot

Other Potential Factors

Many studies have proposed that study time is not the only variable that predicts academic performance. Other concomitant variables may influence the relationship. Consequently, a study should consider other factors as covariates. Some student characteristics are given and cannot be changed by students' efforts [38]. Other predictors include general abilities and characteristics such as motivation, cognitive skills, previous subject knowledge, reading skills, study habits [28], study strategies [27], ability to concentrate, organization skills, sheer memory [11], and past performance (as measured by GPA). Previous studies have not included study habits or learning strategies, such as note-taking strategies, class attendance/punctuality, and attention to the lecture [28]. These factors may not only affect performance but also moderate the effect of study time, either to increase or decrease the required amount of study time to achieve a level of performance. In order to earn a high grade, students with a deficient subject background may need more study time than students with a strong background [39]; however, the relationship between background and amount of study is not clear.

The assumption is that greater e-textbook access leads to greater student success; however, this approach may identify a student with low engagement who is not at risk as a "false-positive." A student with an extensive background may want to invest more study time not just because they want to improve their performance but simply because they enjoy the subject and read for the pleasure of it. Some students study for a long time because they struggle with the material, while others do it because they enjoy the material. Among those students who do not read, some may already be familiar with the subject, while others may find the subject irrelevant to their career goals [27]. An interesting study shows that grade expectations can also moderate the time dedicated to studying. At the beginning of the course, most students are optimistic, but they adjust their study time based on their revised grade expectations after the midterm exams. In other words, it seems that students self-define their fate [35].

Another suggested moderator is the student's inherent "time *needed* for learning." This concept is based on the idea that each student *needs* a different amount of time to achieve a learning goal and that needed time is more significant than spent time [40]. Determining the time needed for learning is very difficult because it depends on individual characteristics. What matters is not the amount of time the student spends reading, but whether the student spends the time that they individually need to read [40]. For instance, if student A and student B both read for 2 h, and student A needs 2 h to master some content, whereas student B requires 3 h, then student A has completed the time needed, while student B has not; consequently, student B will have poorer academic performance.

Another moderator could be the ability to concentrate. In one study, time had a greater impact on academic performance when a student's ability to concentrate was high [28]. In another study, effort alone (study time) was not a predictor of performance, whereas GPA was a better predictor [35].

The Need for Training

Of course, without training and direction, even the use of reading strategies can be shallow. Some students use an e-textbook like a reference guide: just to search concepts [23]. Other students highlight the book diligently, even if they do not understand the concept. Thus, the number of highlights is not directly related to the degree of learning. Frequent highlighting does not guarantee success [41] if the student has poor reading comprehension and poor textbook-reading skills [37]. The instructor needs to teach students effective reading strategies [13]. For instance, skimming is not necessarily undesirable; professionals know the importance of being able to skim, and students must learn principles for effective skimming [32]. In other cases, students may use different, more interactive reading strategies for reading e-textbooks than paper textbooks. Instead of reading several chapters on a small screen in a long stretch, they could read smaller segments followed by an interactive activity [22].

Students must learn how to use their e-textbooks more effectively [1]. Many students are not aware of their e-textbooks' features, or they underutilize these options [36]. Instead of wasting time, students should take advantage of these features. A study shows that very few students used highlighting and note-sharing features in their e-textbooks [42]. Publishers and instructors must do a better job of educating students about these e-textbook features. Another study suggests that if students are unaware of the e-textbook features, they will go unutilized. Students are more likely to be aware of the advantages e-textbooks offer if they have tried at least one feature [23].

The Role of Faculty

Motivation is a vital predictor of reading behavior [27]. Even though students acknowledge their responsibility, they still think the instructor should use motivation strategies. When instructors hold students accountable, they are more likely to read, and increased regular reading may lead to improved performance [1]. Instructors should make the subject interesting and use strategies to motivate students to read [10, 43]. Some strategies include study aids, chapter reviews [12], study guides [1], papers based on the reading, quizzes [32], and the use of social networking tools and journal/blog reflections [44]. Instructors should identify individual students' weaknesses and help them develop effective reading strategies [35]. Students look to the instructor to summarize information from the text. The following study exemplifies the powerful influence an instructor can have if they emphasize the importance of the e-textbook in the course. The instructor annotated the e-textbook with notes in two colors: red (for key topics, study tips for exams, and required homework) and green (for secondary topics and optional topics/homework). Most students read and appreciated the instructor-added notes [17]. When instructors use the textbook, they motivate students to use it too. The opposite is also

true; when the instructor seldom refers to the e-textbook, students are unlikely to read it. Studies indicate that students read more when instructors are clear about the requirement to read the textbook [10].

The Future of Learning Analytics

E-textbooks can generate valuable and useful data. Learning analytics is the analysis of learning-related data. Learning analytics applies data analytics at the individual student level to improve learning outcomes [45]. Learning analytics can help teachers and students analyze learning data to improve student learning [46]. There are two related areas to learning analytics, educational data mining and academic analytics. Academic analytics applies business intelligence at the institutional level. Educational data mining develops new technical methods for educational data analysis [46].

Many learning technology vendors (Blackboard, Desire2Learn, and Canvas-Instructure) provide analytics tools, and there are similar options in the Moodle community [46]. For instance, the E-textbook Library (EBL) platform used in many academic libraries provides transaction logs that are useful for data analysis and interpretation [47]. A dashboard allows the instructor to know who has viewed sections of the e-textbook [17].

Many e-textbook platforms like CourseSmart provide the instructor with a dashboard to monitor students' engagement and performance. The dashboard should not be only available to instructors as a unilateral tracking tool, because students could perceive it as an invasive tool and feel they are being watched. Instead, the dashboard should also be made available to students as a motivational tool. A dashboard can promote self-awareness and reflection; students feel motivated to increase their performance because they compare themselves against the entire class. Instructors and students can set goals and monitor the achievement of those goals [48]. Instructors can motivate students by using a dashboard as a scoreboard in class and team competitions.

Limitations and Future Research

Future studies should consider other independent variables. In addition to accessing e-textbooks, students use substitute methods to access course learning materials such as printing all or excerpts from the e-textbook, using alternative materials, communicating with classmates, social learning, in-class discussions, and study sessions.

The paper reflects on our experience with the university's beta implementation with CourseSmart's e-textbook and student engagement index. We believe this study makes a substantial contribution to the body of knowledge on e-textbook and student engagement.

One of the limitations of measuring e-textbook usage statistics is that some students prefer to print pages and read from a hard copy. Other students even ordered a printed copy of the entire textbook. Therefore, the number of e-textbook pages read would not reflect the actual reading time [17].

Future studies could use a combination of multiple measurement methods to provide triangulation of the results and enhance validity. For instance, the use of a validated instrument such as the metacognitive awareness of reading strategies inventory (MARSI). It can be used to measure students' perceived use of various reading strategies [31]. In addition, instead of measuring the outcome of reading time in terms of grade performance, another qualitative measurement could be student self-reported perceptions and satisfaction with the methods [1].

The study could be replicated to compare the use of e-textbooks in different devices like smartphones, tablets, laptops, and desktops [21]. A future study could also compare e-textbook reading across disciplines, or majors. Another question is whether reading engagement changes over time (sophomores versus graduate students) [13]. Another interesting comparison is quantitative disciplines (like accounting, economics, or engineering, where problem-solving practice could be more important than reading the chapter) versus nonquantitative disciplines (fine arts or history).

The future of e-textbook analytics is promising. Although ethical concerns such as privacy and monitoring [46] must be considered, analytics nevertheless has an immense potential to improve student learning.

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Chapter 12
Inclusive Access Impact on Student Engagement, Success, Retention, and Costs in a Department-Wide Implementation

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Background

Chattanooga State Community College (CSCC) is a community college located in Chattanooga, Tennessee. As described in Part II of this volume, all the math courses in the math department at CSCC has consistently used Pearson MyLab™ Math and MyLab Statistics to deliver digital course materials, homework assignments, and tests for over a decade (with the exception of Math 2120, Differential Equations). In Fall 2011, the department moved from standard MyLab usage to MyLabsPlus™ (MLP), wherein students were batch-enrolled at the start of each semester. This enrollment system granted students first-day access to course materials; however, students were required to pay the access fee within 2 weeks from the start of the course to ensure uninterrupted access for the duration of the semester. In Fall 2013, the department implemented Pearson Inclusive Access and began charging students for MyLabsPlus as part of the course tuition and fees.

At Chattanooga State, the Math Center is the local hub for all matters related to MyLabsPlus (MLP). The coordinator and manager of the lab are responsible for setting up courses in MLP. They copy old courses, create new courses, and run batch enrollment to grant students registered for math courses access to MLP. They ensure that batch enrollment is running each day to enroll and unenroll students that add or drop a course during the late registration window at the start of the semester.

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In addition, the Math Center staff are the central points of contact for MLP tech support. Math Center staff have admin access to all the MLP courses at CSCC. In this way, they can quickly access and investigate any course-related issues. They can also check if students are properly registered for courses and why they may not be granted access due to a course enrollment issue.

Full details regarding the Inclusive Access implementation at CSCC are provided in full in Part II of this volume. In this chapter, the association between Inclusive Access and student outcomes, retention, and engagement will be explored.

Methodology

To study the impact of Inclusive Access on student success and withdrawal rates, historical fall and spring grade distribution data was collected from the CSCC mathematics department from 2009 to 2017. All courses using Pearson MyLabs were included in the analysis, which included all courses in the department aside from Math 2120, Differential Equations. Data was categorized as pre-Inclusive Access, when course materials were distributed with access codes; batch enrollment, the intermediate phase between Fall 2011 and Fall 2013; and Inclusive Access, beginning in Fall 2013, when all students were provided with full and uninterrupted access to course materials starting on the first day of the course.

Table 12.1 outlines the different time periods under study and the number of students included in the study for each implementation phase for the student outcomes and withdrawal analysis. For this study, we chose to compare proportions of students scoring A, B, or C; students earning D, F, or I; and student withdrawals. Our rationale for this delineation was that Inclusive Access has the potential to impact student withdrawals that occur due to lack of student access to course materials.

To assess differences in student outcomes and withdrawals, the z-test for proportions was used. Because the batch enrollment period differed from the full Inclusive Access implementation period, significance testing was performed to compare the pre-Inclusive Access and Inclusive Access groups.

To assess differences in student engagement, student MyLab homework data was retrieved from the Pearson MyLab datastores. All data for CSCC math courses administered between Spring 2010 and Fall 2018 that was still extant was retrieved.

Table 12.1 Time periods and number of students included in the outcomes and withdrawals analysis for each implementation period

	Time period	Number of students
Pre-Inclusive Access	Fall 2009 to Spring 2011	7653
Batch enrollment	Fall 2011 to Spring 2013	8954
Inclusive Access	Fall 2013 to Fall 2017	22,007

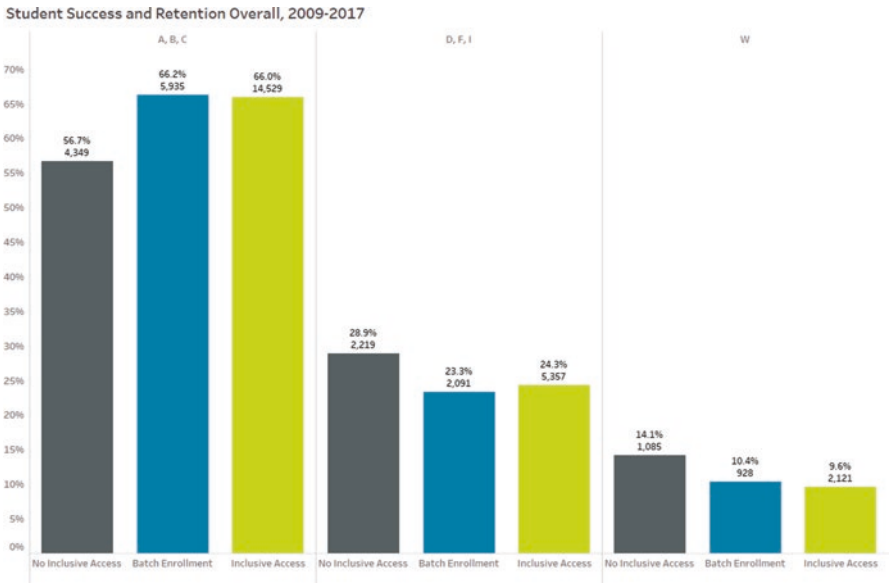

Fig. 12.1 Overall student success and retention rates since 2009. Labels indicate percentage of students in each category and number of students that comprise that percentage

Due to MyLab data deletion policies, a large portion of the pre-Inclusive Access data was not available for analysis. As a result, engagement results are calculated as relative measures to account for the differences in sample size.

Student Outcomes and Retention

Overall Analysis

Overall, student outcomes and within-course retention improved after the transition to batch enrollment and Inclusive Access. Student success improved nearly 10 percentage points, and withdrawals dropped over four percentage points (Fig. 12.1). With some variation, this trend has been consistent across the eight-year span since 2012 (Fig. 12.2).

Significance testing was performed using the z-test for proportions comparing the proportions for the pre-Inclusive Access and Post-Inclusive Access groups. As can be seen in Table 12.2, the differences in proportions for student success, non-success, and withdrawals were significant for the overall data ($\alpha < 0.01$).

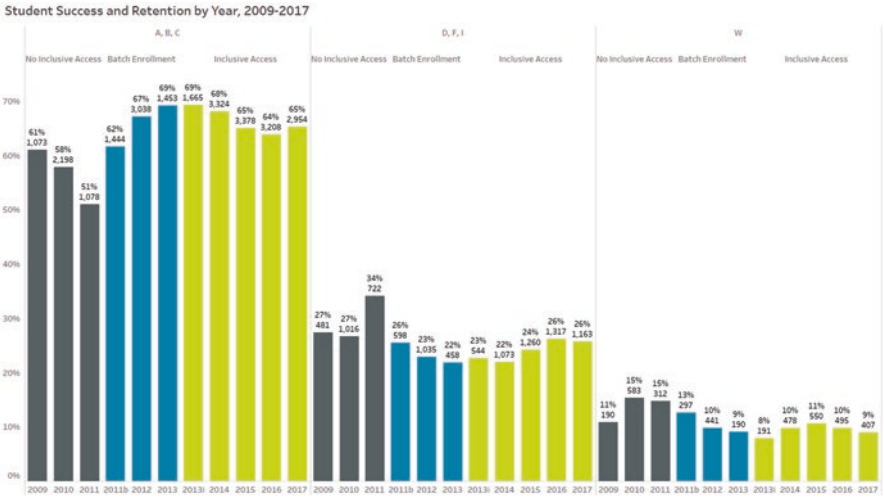

Fig. 12.2 Student success distribution, 2009–2017. Note the high withdrawal rates in the year and a half preceding implementation of batch enrollment in Fall 2011

Table 12.2 Time periods and number of students included in the engagement analysis for each implementation period

	Time period	Number of students
Pre-Inclusive Access	Fall 2009 to Spring 2011	1242
Batch enrollment	Fall 2011 to Spring 2013	11,554
Inclusive Access	Fall 2013 to Fall 2018	35,951

Outcomes and Retention Analysis by Student Category

Significance testing was performed using the z-test for proportions computed for each student subgroup, comparing the proportions in the pre-Inclusive Access and Post-Inclusive Access groups. As can be seen in Table 12.3, the differences in proportions for student success and withdrawals were significant for all student subgroups (α <0.01). Four student subgroups did not show a significant difference in proportions of D, F, and I rates.

Financial Aid Status Students receiving financial aid showed increased success following the transition from traditional delivery of MyLab to batch enrollment. Since that time, student withdrawals have decreased over four percentage points. Student success (the percentage of students receiving a course grade of A, B, or C) decreased slightly after Inclusive Access was implemented, but the percentage of students withdrawing remained the same, at only 12.2%.

Student Age Nontraditional students (above age 23) and students younger than age 18 also demonstrated improved outcomes following the transition to batch enroll-

Table 12.3 Success and withdrawal rates for students overall and student subgroups during each implementation period

Student group	Grade category	No Inclusive Access		Batch enrollment		Inclusive Access		z-score	p-value	Significance at $p < 0.01$
		percentage	Count	percentage	Count	percentage	Count			
All students	A, B, C	56.7	4349	66.2	5935	66.0	14,529	14.57	$p < 0.00001$	Yes
	D, F, I	28.9	2219	23.3	2091	24.3	5357	−7.9541	$p < 0.00001$	Yes
	W	14.1	1085	10.4	928	9.6	2121	−10.9425	$p < 0.00001$	Yes
	Total		**7653**				**22,007**			
Financial aid	A, B, C	50.3	1666	60.5	2441	55.9	4755	5.4827	$p < 0.00001$	Yes
	D, F, I	32.7	1084	27.2	1095	31.8	2704	−0.9405	$p = 0.17361$	No
	W	16.7	553	12.2	494	12.2	1037	−6.4302	$p < 0.00001$	Yes
	Total		**3303**				**8496**			
Traditional age	A, B, C	51.9	2185	62.3	2972	62.1	8192	11.7354	$p < 0.00001$	Yes
	D, F, I	34.5	1452	27.7	1321	28.3	3727	−7.5705	$p < 0.00001$	Yes
	W	13.4	565	10.0	479	9.6	1265	−6.9073	$p < 0.00001$	Yes
	Total		**4202**				**13,184**			
Nontraditional	A, B, C	57.5	1630	65.4	2191	60.7	3618	2.8519	$p = 0.00219$	Yes
	D, F, I	24.4	692	21.3	714	25.2	1504	−0.8083	$p = 20,897$	No
	W	17.5	496	13.0	437	13.7	819	−4.5439	$p < 0.00001$	Yes
	Total		**2818**				**5941**			
Young students	A, B, C	84.4	534	91.9	772	94.3	2719	8.5719	$p < 0.00001$	Yes
	D, F, I	11.8	75	6.7	56	4.4	126	−7.252	$p < 0.00001$	Yes
	W	3.8	24	1.4	12	1.3	37	−4.3433	$p < 0.00001$	Yes
	Total		**633**				**2882**			

(continued)

Table 12.3 (continued)

Student group	Grade category	No Inclusive Access		Batch enrollment		Inclusive Access		z-score	p-value	Significance at $p < 0.01$
		percentage	Count	percentage	Count	percentage	Count			
Female	A, B, C	58.6	2284	68.2	3177	67.5	7838	10.0889	$p < 0.00001$	Yes
	D, F, I	27.2	1062	21.3	993	22.9	2662	5.4357	$p < 0.00001$	Yes
	W	14.0	544	10.4	483	9.5	1100	7.88	$p < 0.00001$	Yes
	Total		**3890**				**11,600**			
Male	A, B, C	54.7	2065	64.1	2758	64.2	6691	10.2725	$p < 0.00001$	Yes
	D, F, I	30.6	1157	25.5	1098	25.9	2695	5.5559	$p < 0.00001$	Yes
	W	14.3	541	10.3	445	9.8	1021	7.5623	$p < 0.00001$	Yes
	Total		**3763**				**10,407**			
Black	A, B, C	39.0	406	46.2	523	47.5	1150	4.603	$p < 0.00001$	Yes
	D, F, I	40.2	419	38.7	438	39.1	948	0.6063	$p = 0.27093$	No
	W	20.4	212	15.1	171	13.2	319	5.3789	$p < 0.00001$	Yes
	Total		**1037**				**2417**			
White	A, B, C	59.9	3483	69.9	4834	68.8	11,837	12.4186	$p < 0.00001$	Yes
	D, F, I	26.8	1556	20.5	1417	22.0	3780	7.4849	$p < 0.00001$	Yes
	W	13.0	755	9.5	654	9.2	1579	8.2809	$p < 0.00001$	Yes
	Total		**5794**				**17,196**			
Other	A, B, C	57.3	328	62.7	402	63.8	848	2.6758	$p = 0.00368$	Yes
	D, F, I	27.4	157	26.1	167	26.5	352	0.4065	$p = 0.3409$	No
	W	15.2	87	11.2	72	9.7	129	3.4667	$p = 0.00026$	Yes
	Total		**572**				**1329**			

Significance is calculated for differences between Pre-IA and Post-IA groups only

ment. Despite a slight dip in student outcomes following the transition to Inclusive Access, which remained three percentage points higher than it was when students received course materials through access code purchase, student withdrawals in the group above age 23 remained consistently lower during the batch enrollment and Inclusive Access periods. The young student group's success rate improved 7.5 percentage points following the implementation of batch enrollment and then improved again after Inclusive Access was implemented, with success rates over 94% during the Inclusive Access period. Student drop, fail, and incomplete rates decreased for this population from close to 11.8% to 4.4%, and student withdrawals dropped from 3.8% to 1.3%. Traditionally aged students (between 18 and 24 years old) also demonstrated improved outcomes consistent with the improved outcomes observed overall.

Gender Male and female students evidenced improved outcomes following the implementation of batch enrollment and Inclusive Access, with increased success and improved retention rates similar to the overall rates.

Ethnicity/Race Ethnicity/race data was provided in three groups: Black, White, and other. Student success increases among White students matched the overall trends, with increases in success for the remaining two groups slightly lower than the overall percentage point increase. The two non-White groups evidenced greater improvements in retention, with Black student withdrawals decreasing from 20.4% to only 13.2%, and students in the other category decreasing from 15.2% withdrawals to only 9.7%. Non-White students evidenced an additional increase in student success and decrease in withdrawals between batch enrollment and Inclusive Access, rather than merely maintaining the improved success that was achieved following the transition to batch enrollment**.**

Student Engagement

To conduct an analysis of student engagement in the MyLab platform before and after Inclusive Access was implemented, over two million records of student usage data were pulled from the MyLab datastores from 2010 through 2018. The data for delivery model was then coded (before Inclusive Access, with batch enrollment, and with Inclusive Access). In this discussion, both batch enrollment and Inclusive Access are referred to as first-day models. The number of records pulled for 2010 was low, probably due to data deletion protocols. As a result, only 1243 records of pre-Inclusive Access data were available, but over 11,500 records for the batch enrollment period and over 36,000 records for the Inclusive Access period. The data was then merged with semester start and end data from CSCC's academic calendars. In this way, it was possible to compare student usage relative to semester start dates to determine if student engagement with MyLabs began earlier and more intensively after the delivery model changed.

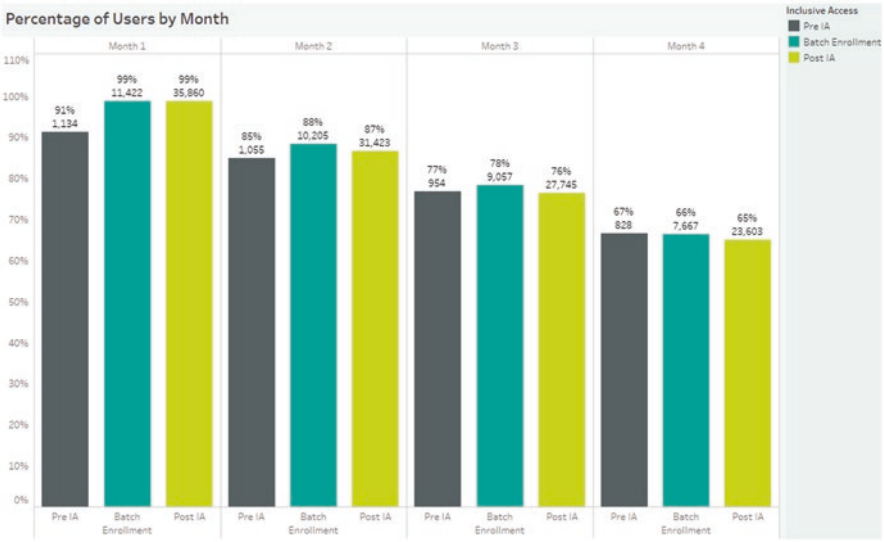

Fig. 12.3 Percentage of MyLab users submitting assignments during each month of the course. The largest difference in student usage between traditional MyLab implementation and batch enrollment/Inclusive Access periods can be observed during the first month of the semester

Figure 12.3 visualizes the percentage of MyLab users submitting assignments during each month of the course. The largest difference in student usage between traditional MyLab implementation and first-day access implementations can be observed during the first month of the semester. In the traditional model, 91% of students enrolled in the courseware submitted assignments during the first month, compared to 99% during the first month after batch enrollment and Inclusive Access were implemented. This difference was found to be significant using the z-test for proportions at $\alpha < 0.01$ ($z = 24.78$, $p < 0.00001$).

In Fig. 12.4, student submissions were calculated by semester week. The percentage of students enrolled in the courseware that submitted homework each week of the course can be compared for the different delivery models. The largest difference in student usage between traditional MyLab implementation and the first-day implementations (batch enrollment and Inclusive Access) can be observed in the second week of the semester, when only 36% of users submitted assignments during traditional implementation, and nearly 80% did so when batch enrollment and Inclusive Access were implemented.

Figure 12.5 shows the percentage of MyLab students submitting assignments during each day of the first month of the semester. As can be seen, students using materials delivered in the Inclusive Access model began showing significant usage as early as the first day of the course, whereas before Inclusive Access, similar usage rates occurred only on the eighth day of the semester. In addition, overall usage remains higher in the batch enrollment and Inclusive Access groups each day of the first month of the semester. It is interesting to note the difference in student

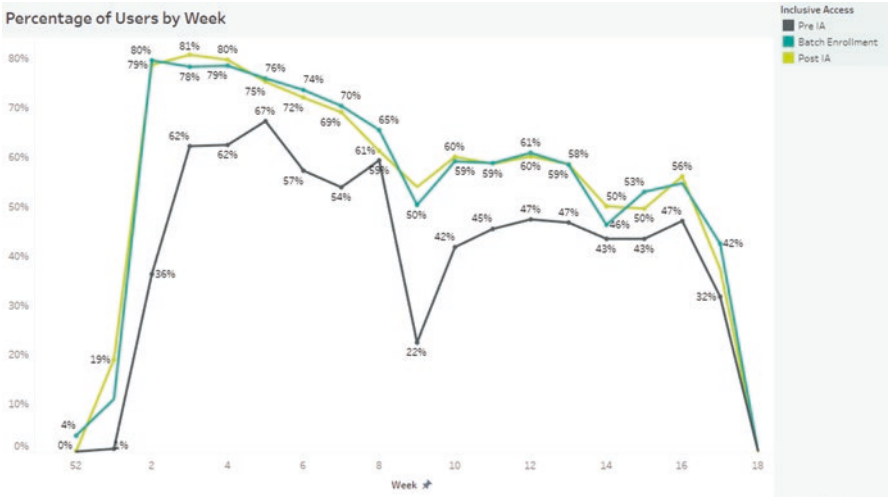

Fig. 12.4 Percentage of MyLab users submitting assignments during each week of the course

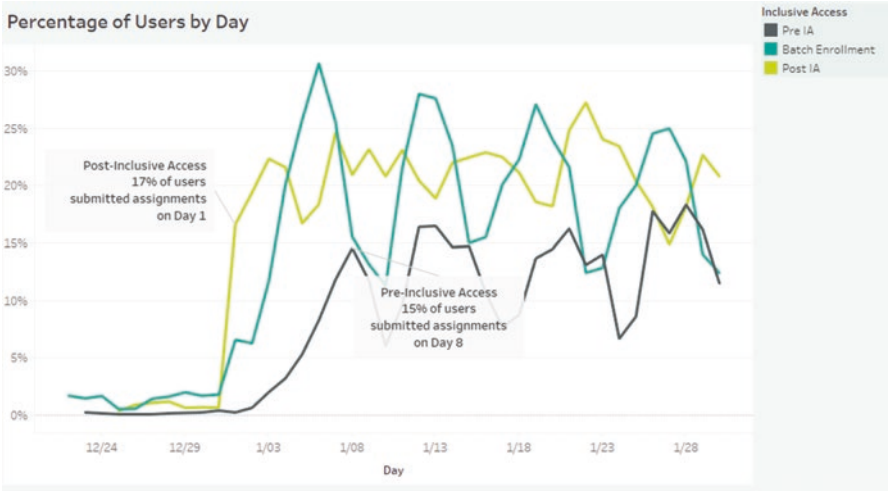

Fig. 12.5 Percentage of MyLab users submitting assignments during each day of the course. The date 1/1 is the first day of the semester

usage by day between batch enrollment and Inclusive Access, with students in the Inclusive Access model showing earlier intensive engagement than those in the batch enrollment model.

Student submissions by homework assignment were analyzed next. The first five homework assignments in each course section were identified and the percentage of students in each group that submitted each assignment during the first month was calculated. As can be seen in Fig. 12.6, students in the Pre-IA model submitted the

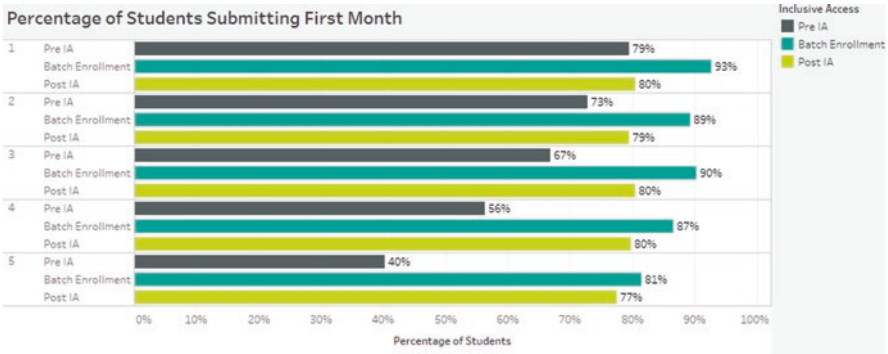

Fig. 12.6 Percentage of students enrolled in MyLab submitting each of the first five homework assignments during the first month of the semester

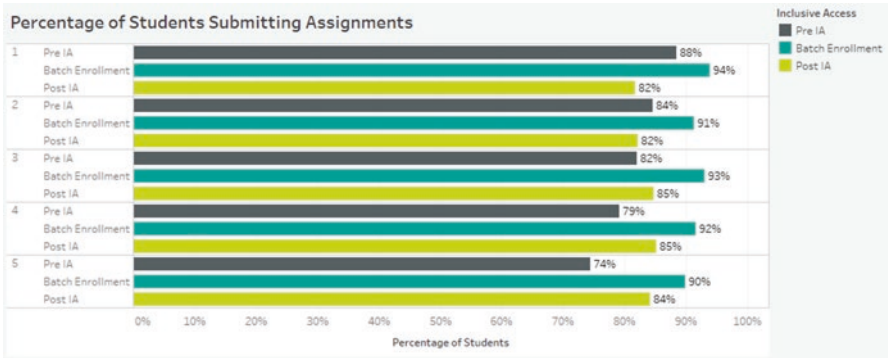

Fig. 12.7 Percentage of students enrolled in MyLab submitting each of the first five homework assignments at any point over the course of the semester

first five assignments at a much lower rate than their counterparts during the first month of the course. When compared with submissions of these homework assignments over the course of the semester (Fig. 12.7), the differences are smaller. It is interesting to note the overall higher submission rates for batch enrollment students. Overall, it can be concluded that the first-day models are associated with a higher level of student engagement and an increased homework submission rate during the first month of the semester.

The final analysis examines the percentage of students submitting each of the first five homework assignments during each week of the semester (Fig. 12.8). As can be seen in the graphs, a larger percentage of students in the batch enrollment and Inclusive Access models submitted each of these homework assignments as much as 2 weeks earlier than students in the pre-Inclusive Access model. In addition, student activity is more clustered or concentrated after students received

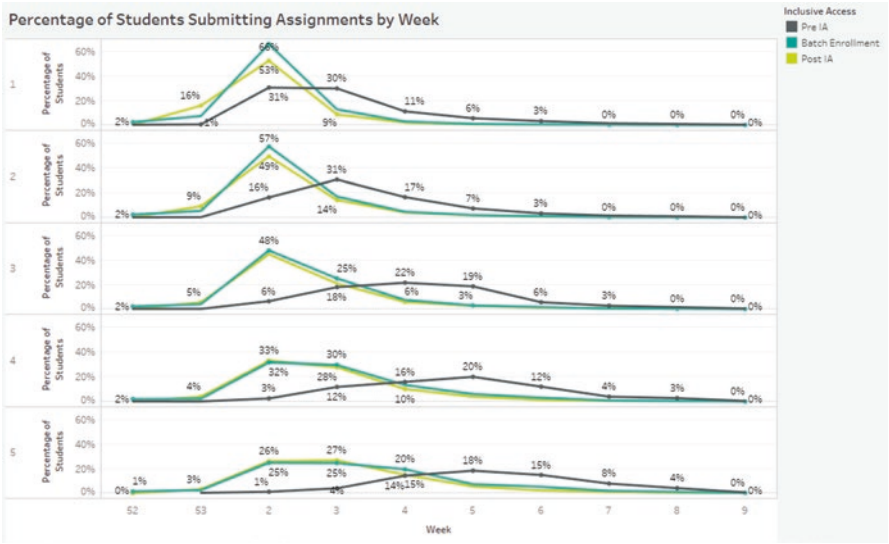

Fig. 12.8 Percentage of students submitting each of the first five homework assignments during each week of the semester. Week 1 is the first week of the semester

first-day access, with a higher percentage of students submitting assignments in a one-week period. Before Inclusive Access, student submissions were distributed over a larger number of weeks. The first-day models are therefore associated with more timely and earlier student submissions.

Conclusion

Overall, the data indicate that first-day delivery models are associated with improved student outcomes, retention, and engagement. Of course, there are many variables that could have affected any of these indicators. In addition, when considering the MyLab engagement data, the small pre-Inclusive Access sample size should be noted. This dataset is particularly significant in light of the length of time that Inclusive Access has been implemented, the level of MyLab use across the department, and the level of support provided by the department to enable a successful delivery of first-day access to students.

Chapter 13
Managing a University Inclusive Access (E-Book) Program to Maximize Stakeholder Satisfaction

Courtney Hurley and Weixing Ford

With the dramatic increase in the cost of textbooks, university Inclusive Access/E-book (IAE) programs have become a popular alternative for providing the required course content to students at a rate that is significantly lower than the cost of traditional textbook models. IAE programs typically provide course content to students through a course-fee structure that is added to students' tuition and fee schedules for each semester. Overall, universities often use IAE programs in order to reduce the cost of textbooks and to increase accessibility to required course materials. This chapter provides a discussion on how college of business at Texas A&M University–San Antonio (A&M-SA) utilizes the four functions of management for successful management of its IAE program.

The four functions of management include planning, organizing, influencing, and controlling. At A&M-SA college of business, these management functions are systematically used to achieve the university's IAE program goal of maximizing stakeholder satisfaction. It took careful and extensive planning to set important goals and measures of execution before the IAE program was launched. After its launch, the program has been organized in ways that frequent feedback loops (controlling) have been implemented to assess the program efficiency. It is also important to evaluate and manage the influence from various stakeholders of the IAE program such as students, faculty, staff, administrators, and publishers. This chapter will focus on managing an IAE program to maximize student and faculty satisfaction.

Two survey studies were conducted in order to assess the success of these four management functions for the IAE program at A&M-SA. In one survey research, 170 students reported their feedback on various aspects of the IAE program. These students were recruited from 34 classes spanning all majors in the college of

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business such as management, marketing, accounting, finance, computing, and cyber security. Students' participation in the survey research was voluntary and anonymous. The survey was administered online through the Qualtrics survey tool. In another study, 50 faculty members were contacted to participate in the survey study to talk about their experience and satisfaction/dissatisfaction about the IAE program. The survey was administered online through the Qualtrics survey tool and participation was voluntary and anonymous. Twenty faculty members responded to the survey, among which 11 faculty members completed the survey. Several interviews were also conducted with the IAE program administrator and publisher representatives to gather feedback from these key program management personnel. The empirical evidence from these studies are reported in the following sections on each management function.

Planning

Embarking on the development and implementation of an IAE program takes extensive planning on the part of the program manager. Certo and Certo [3] define planning as "the process of determining how the organization can get where it wants to go and what it will do to accomplish its objectives" (p. 107). For a university IAE program, this involves determining what the needs of the stakeholders are. In other words, the planning function involves determining what students and faculty need in order to be satisfied with the program. In order to maximize stakeholder satisfaction, the program manager needs to be mindful of the role and purpose of each of the stakeholders. In order to do this, specific program objectives need to be identified for each stakeholder group.

Chulkov and VanAlstine [4], Falc [5], and Millar and Schrier [8] report that the most important factors for students being satisfied with a e-book program is that they have options of both an electronic textbook and a printed textbook. Accordingly, this preference is incorporated into A&M-SA's IAE program goals (e.g., goal number four, below). For students, A&M-SA's IAE program needs to meet five objectives [7]:

1. Provide the required course content at a price that is competitive or lower than price of the same content at other retail or used marketplaces
2. Provide the course content to students no later than the first day of class
3. Make the content accessible via the university's Learning Management System
4. Provide access to a low-cost printed version of the course content
5. Make the content accessible online (via the Internet) and offline (via a downloaded version) and on multiple devices

The survey data from students' feedback provided evidence on how successfully these goals have been met by the IAE program. In the survey, 170 students reported how satisfied they were with various aspects of the IAE program in the scale of 1 to 5 (1, very dissatisfied; 2, somewhat dissatisfied; 3, neutral; 4, somewhat satisfied; 5,

very satisfied): overall satisfaction (mean = 3.97, SD = 1.272), price of e-books (mean = 3.75, SD = 1.298), timely delivery of e-books at the beginning of the semester (mean = 4.21 SD = 1.115), e-book integration to Blackboard (mean = 4.10, SD = 1.217), availability of print copy (mean = 3.23, SD = 1.378), and ease of using the e-book (mean = 3.83, SD = 1.339). When the students reflected on comparison between e-book and traditional book, majority of the students reported that they believe the e-book is superior to the traditional book in the following aspects: (1) ease of using such as finding information, highlighting, note-taking, etc. (percentage of respondents reporting the e-book to be superior to the traditional book: 65.5%); (2) enriched user experience such as flash cards, availability of online quiz, additional multimedia learning materials, etc. (90.6%); (3) convenience such as having convenient accessibility to the book whenever and wherever and storing (digitally or physically) and carrying the book (digitally or physically) (83.6%); (4) long-term accessibility (long after you took the class, if you want to revisit the book) (42.1%); and (5) ease of reading and facilitating comprehension and memorization (60.8%). These feedbacks from the students reflect that the students have predominantly positive attitudes about the IAE program in terms of its cost advantage, accessibility, timely delivery, ease of use, convenience, and enriched experience. Overall, the IAE program has successfully met the students' need.

In a study examining the faculty perspective on e-book programs, Bossaller and Kammer [2] found that the most important factor for faculty satisfaction is content choice and control. Accordingly, for faculty, the A&M-SA's IAE program needs to meet four objectives:

1. Multiple publishers must be included as content vendors so that academic freedom is ensured.
2. Provide well-designed instructor supplemental materials such as PowerPoint slides, test banks, case studies, videos, etc.
3. Provide electronic homework products to students in needed courses (mostly quantitative courses).
4. Provide technical support to assist with using the products efficiently.

From the survey data of 11 faculty members, 45.5% of the faculty believed that the e-book program did not compromise their academic freedom in terms of which textbook they can choose for their courses. Similarly, only 54.5% of faculty reported that the e-books they were using for their courses were exactly their favorite textbook choices, while 45.5% reported that sometimes they cannot get their favorite textbook in the e-book format. About 81.8% of the faculty agreed that they have received sufficient organizational support (such as having e-book coordinator and IT support) from the institution to adopt the e-book. The faculty being surveyed also reported how satisfied they were with various aspects of the IAE program in the scale of 1 to 5 (1, very dissatisfied; 2, somewhat dissatisfied; 3, neutral; 4, somewhat satisfied; 5, very satisfied): ease of adopting the e-book (e.g., placing e-book order for the courses) (mean = 4.09, SD = 0.701), supplemental teaching/learning materials (mean = 3.82, SD = 0.982), publishers' technical support (mean = 3.27 SD = 1.421), cost savings for the students (mean = 3.82, SD = 0.982), university IT

support for integrating the e-book to the Blackboard (mean = 3.82, SD = 0.874), and increased work productivity due to the resources offered by the e-book (mean = 3.73, SD = 1.009). These data indicate that the IAE program has reasonably met the faculty's needs of using e-books in their classes.

Organizing

In addition to the planning function, the organizing function is also a critical factor that leads to program success (or not, as the case may be). One important issue to consider is allocating sufficient organizational resources in order to allow the program to be successful. Another important organizing element is the placement of the e-book program within the university's organizational structure. Certo and Certo [3] define organizing as "the process of establishing orderly uses for resources within the management system" and "organizing skill is the ability to create throughout the organization a network of people who can help solve implementation problems as they occur" (p. 67).

In order to give a program a chance at success, sufficient organizational resources need to be assigned to it. For an IAE program, these organizational resources include primarily human and technology. For instance, an employee needs to have the IAE program as their main job responsibility so that they are accountable for program success. Technology is an important factor for program success and, accordingly, needs to be sufficient to support the program goals. This is particularly important since Ainsa [1] reports that students who use computers more frequently are better prepared to best utilize the technology associated with IAE programs. Furthermore, Falc [5] reports that the biggest frustration that students face with e-books is associated with technology.

Ultimately, the self-sufficiency program goal suggests that the users of the program must ultimately pay for it. Since IAE programs typically replace or are a substitute for traditional textbooks, the primary users of IAE programs are students. Therefore, the cost of the IAE program should be borne by the students. While this is a reasonable conclusion, the program manager needs to be mindful of the number one objective of the program – that is, providing the required course content at a price that is competitive or lower than the price of the same content at other retail or used marketplaces. The additional fee charged to fund program resources (i.e., human and technology) needs to be built into the course fee so that the final course fee paid by the student reflects a lower price than a traditional textbook. According to Dean Hurley [7], this is the fee model that A&M-SA's IAE program utilizes. The survey date from 170 students indicates that majority of the students (74.7%) believed that the IAE program has saved them money compared to the traditional textbooks, additional 19.4% of students thought that the IAE program may have helped them save money, and only 5.5% of the students did not believe in such cost benefits of the IAE program. Although students had the option to purchase the print

copy of the textbook at a modest cost, only 16.5% of the 170 students actually purchased the print copy.

Based on the survey data from 170 students, 45.9% of the students never encountered any type of technical problems while using the e-book, and 33.5% of the students were able to have the technical problems resolved effectively by the publisher's technical support team. However, 20.6% of the students encountered technical problems that were not solved. This means that a significant number of students were having technical problems which should be better addressed. This is where the IAE program can be improved.

An interview with the IAE program coordinator reveals the success as well as many challenges that an IAE program may have. At Texas A&M University, one IAE program coordinator needs to work on getting timely e-book orders processed and ensure smooth operation of all e-books throughout the semester for over 500 classes at any given time. This job can easily get overwhelming with many moving pieces coordinating among numerous stakeholders: students, faculty, publishers, and university administrators. Some publishers seemed to have greater difficulty to integrate their e-book learning platform into Blackboard. The communication messages sent from the IAE coordinator were sometimes neglected by faculty to cause delay or mistake on e-book orders. Fortunately, these issues can be resolved with follow-up communications, especially since the IAE program has received wide acceptance from the faculty, and more and more students are getting used to and embrace the e-books. The future of the IAE program will be even brighter with more technology advancement and the increasing prevalence of the habit of learning on electronic device. The interviews with publisher representatives confirmed that they will continue to improve their technology and technical support to facilitate better user experience and lessen administrative burden.

Influencing

Certo and Certo [3] define influencing as "the process of guiding the activities of organization members in appropriate directions" (p. 5). Furthermore, change is often disliked simply because it represents something different. When an organization undertakes the implementation of a program which represents a major change in how business is conducted, some stakeholders may resist (Certo and Certo [3], p. 247). When implementing an IAE program, both students and faculty will need to adjust to the changes that result from no longer relying on a traditional textbook program. In order for the IAE program to be successful, the program manager must develop the best process for influencing stakeholders that the new program is better than the old program.

In most organizational settings, peers and colleagues are the best advocate for influencing others. Specifically, students have the best chance of influencing other students while faculty has the best chance of influencing other faculty, of the positive benefits of the IAE program. In order to address this problem and positively

influence stakeholders, Dr. Hurley [7] initiated student ambassador and faculty champion programs. Student ambassadors were paid as student workers and visited classes (via coordination with faculty), cafeteria, and other common gathering places for students. Essentially, they were charged with talking with students, assisting them with any e-book problems they had, and explaining the program to them. Faculty champions were recruited to participate to the IAE program by adopting e-books for their courses. In 2010, when the IAE program was initiated, iPads were also being introduced into the higher education landscape [6]. While faculty training for the program focused on cost savings to students, all faculty who adopted an e-book were issued an iPad. This resulted in many faculty championing the IAE program. However, awareness of the faculty champion program need to be increased. Of the 11 faculty members being surveyed, 72.7% had not heard about this program.

The survey data shows that the students' attitude about the IAE program has improved after having experience of using the e-book: among the 170 students being surveyed, only 58.8% of these students had a positive attitude about the e-book when they first heard of it. There were 77.6% of these students who think of the e-book favorably after using the e-book. This is consistent with the feedback that faculty had received from the students: 54.5% of faculty reported receiving positive feedback from their students regarding their e-book experience, 27.3% of faculty received mixed feedback from the student, and only 9.1% of faculty received negative feedback from the students. The IAE program should continue to focus on the efforts of getting faculty champions and student ambassadors to promote the IAE program among all faculty and students.

Controlling

Certo and Certo [3] define controlling as a "systematic effort by business management to compare performance to predetermined standards, plans, or objectives to determine whether performance is in line with these standards and presumably to take any remedial action required to see that human and other corporate resources are being used in the most effective and efficient way possible in achieving corporate objectives" (p. 14). Essentially, controlling involves the use of program feedback to improve the program and to modify program elements to better meet program goals.

After the IAE program was launched, the most frequent complaint from students was that they did not have a device at home to be able to access their e-books. In addition, some students who looked at computer screens all day at work complained that their eyes were tired and they did not want to have to look at a computer screen to read their e-book. As part of the controlling function (i.e., the feedback loop) and to remedy this issue, in 2011, the IAE program launched a low-cost student iPad rental program. At $50 per semester, students were able to rent an iPad as part of the IAE program. Almost immediately, these student complaints disappeared [7]. However, the recent survey of 170 students indicates that only 15.9% of the students

are aware of the iPad rental program. Work needs to be done to increase awareness of this rental program among students.

Occasionally, some students complained that e-books were more expensive through the university IAE program compared to when they can be purchased by themselves online. This feedback indicates that the program administrators need to have more communication with the students about the fee structure of the IAE program especially when it is offered through the course tuition and the price for the e-book itself is not completely transparent. Some students also complained that the e-book was difficult to access after the course was over. The university IAE program may want to reevaluate whether to grant students continuing access after the courses are over and reach new arrangements with the publishers for providing permanent access to the e-book without added cost to the students.

The survey data on 170 students across a class major also reveals an interesting fact that students tend to prefer the e-book for less technical course subjects such as management, marketing, history, English literature, sociology, etc., while they prefer print book for more technical course subjects such as statistics, engineering, accounting, finance, etc. (see Table 13.1 below).

When the faculty was asked "If E-book is optional, would you still choose E-book for your classes?" There were 54.5% of faculty indicating that they will definitely use e-books, while 45.5% of the faculty wanted to use the e-book for some of their classes. No faculty indicated that they will not use the e-book at all. This reflects the overwhelming acceptance of the IAE program among the faculty. The faculty members also voiced a few concerns or suggestions about the IAE program. For example, the process to place the e-book order was not completely smooth sometimes: there were mixed messages on when the book order was due and there was little flexibility when late changes need to be made. The faculty felt continuous pressure from the publishers to switch to their textbooks. The students complained about not being able to review past quizzes or assignments. And most often, faculty felt frustrated that their favorite textbooks were not offered in e-book format. These concerns will be addressed when the university continues to improve its IAE program.

Table 13.1 Students' preferences of e-book cross course subject

Course subject	Prefer e-book	Prefer print book	No preference	Course subject	Prefer e-book	Prefer print book	No preference
Marketing	70.6%	15.9%	13.5%	Accounting	44.7%	44.1%	11.2%
Management	66.5%	20.0%	13.5%	Statistics	41.2%	45.9%	12.9%
History	60.6%	22.9%	16.5%	Finance	45.3%	40.0%	14.7%
English literature	56.5%	27.6%	15.9%	Physics	51.2%	30.0%	18.8%
Sociology	63.5%	15.3%	21.2%	Engineering	41.8%	30.6%	27.6%
Average	63.54%	20.34%	16.12%	Average	44.84%	38.12%	17.04%

Conclusion

The university's IAE program has been an effective program which has made access to textbooks much easier and less expensive for students. There are many factors that go into implementing an IAE program. This chapter summarizes the four functions of management (planning, organizing, influencing, controlling) which are used for the implementation of the IAE program. Reflecting on these four functions of management provides the feedback loops for university leadership and administrators to make modifications to the program in order to better meet the program's goals. As technology improves, many of the obstacles experienced with current IAE programs will be reduced, and as programs become more common, more ideas as to best practices will make future program deployments easier.

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Chapter 14
Inclusive Access and Student Engagement: How Inclusive Access Spurs Students to Own Learning in a High-Enrollment Statistics Course

Henry Wakhungu and Dina Yankelewitz

The IU eText Program

Indiana University's (IU) eText program was rolled out in Fall 2011. The main features of the program included extended access to eTexts, elimination of printing restrictions, cost savings, access via multiple devices, and a single access point for all digital courseware [1, 2]. As part of this program, students received first-day access to their course materials. By 2017, over half of all IU students had used an eText at least once during their course of study, and the program saved students $8.1 million (ibid).

In addition to first-day access to digital texts, the eText program provides the option for instructors to adopt and provide access to digital courseware like Pearson MyLab™, Mastering™, or Revel™ to digitally deliver the text as well as homework assignments, adaptive Study Plan materials, and assessment tools.

Inclusive Access in Statistical Techniques Course

The O'Neill School of Public and Environmental Affairs at Indiana University serves nearly 3000 students and is the largest public policy and environmental studies institution in the United States. Its Statistical Techniques course (SPEA K300) is a high-enrollment course that can be taken by students within the school as well as other students at IU seeking an introductory statistics course. Dr. Henry Wakhungu has taught this course for 20 years. For the past 10 years, he has used Pearson's MyLab Statistics to provide course materials and resources to his students. In Fall

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2015, Dr. Wakhungu implemented the IU eText program in his course, enabling students to access the course materials on the first day of class. Since Fall 2016, Dr. Wakhungu has provided his students with MyLab Statistics courseware through the IU eText program by integrating the courseware into Canvas, IU's learning management system (LMS). After introducing the MyLab adaptive Study Plan, Dr. Wakhungu transitioned to requiring its use in the course and has found that students have benefited greatly from this adaptive resource.

Since implementing MyLab's Statistics and the Inclusive Access model via the IU eText Initiative, Dr. Wakhungu has observed increased enrollments in Statistical Techniques. The course currently attracts students from other campuses at IU as well as students from IU Bloomington, and enrollments in the course are approximately 2000 students annually. Two full-time faculty, one adjunct faculty, and two associate instructors currently teach the course in conjunction with a team of 12–15 graduate teaching assistants.

Faculty Experience

According to Dr. Wakhungu, students benefit from the digital course materials and quickly learn to appreciate and value the practice and skill development that it provides. He reminds students of the process of learning that they should follow to become successful, which includes attending class, completing the homework with the assistance of the MyLab learning aids, working on the Study Plan, and then taking the MyLab quizzes. He has found that as students begin to understand how the instructional resources help them master the material, they become "addicted" to it, become more engaged in the course, and learn to take ownership of their learning. He has observed both increased involvement and, at the same time, a reduction of student visits during office hours as students learn to take advantage of the online resources and become masters of their own learning.

Student Experience

Dr. Wakhungu requires students to watch a video that explains which resources are available to students and how these resources help them learn and succeed in the course. After watching the video, students reflect on the video in writing so that they internalize their understanding of the resources available to them. After they take the first exam in the course, students reflect again on their use of the resources and how they have impacted their performance in class and on the first exam. Finally, at the end of the course, students again reflect on the use of the resources and their association with their success in the course. Dr. Wakhungu believes this exercise plays a critical role in students' successful use of the resources.

Table 14.1 Student survey results, Spring 2019 (n = 120)

Survey statement	Percentage of students that agree or strongly agree
My instructor actively made use of the digital course materials in the course	97.5
The digital course materials were easy to access	96.7
Having access to the digital course materials in the first week of class helped me to be better equipped and/or prepared to succeed in the course	88.3
The cost of the digital course materials was a good value compared to textbooks I've purchased in the past	84
I learned more from the digital course materials than what I normally learn from reading paper textbooks	82.5
I was more engaged in the course because I had access to digital course materials in the first week of class	80.7

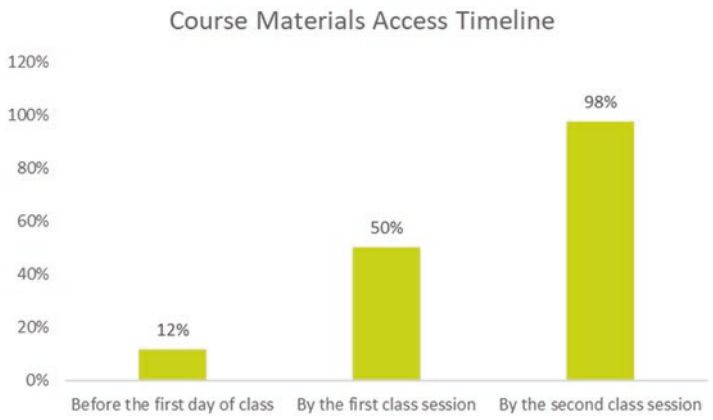

Fig. 14.1 Student survey responses regarding timeline of access to digital course materials

In Spring 2019, Dr. Wakhungu asked students to participate in a survey that collected feedback on their perception of the impact of Inclusive Access and first-day access to course materials on their learning and success in the course. Of the 684 students enrolled in the course that semester 120 students responded to the request and completed the survey. Table 14.1 outlines the percentage of students who responded agree or strongly agree to several questions from the survey.

Figure 14.1 depicts student survey responses regarding when course materials were accessed. By the second-class session, 97.5% of students accessed the materials. In addition, only 29% of the students responding to the survey stated that they usually or always purchase course materials if they are not included in the IU eText program. One student added a comment stating, "They force me to buy books; it helps."

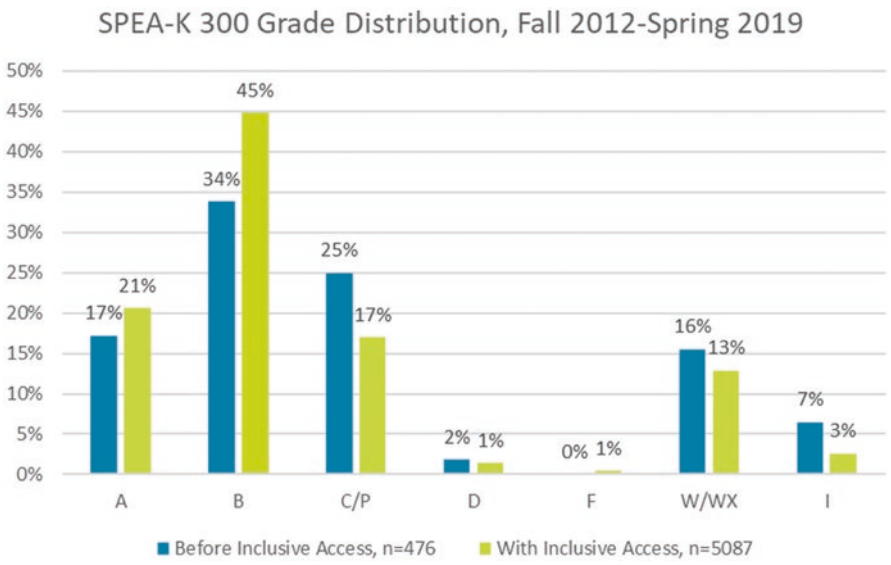

Fig. 14.2 Student grade distributions before and after Inclusive Access implementation, Fall 2012 to Spring 2019

Student Outcomes

Student Grades and Retention

To analyze the association between Inclusive Access and student grades and persistence, student grade distributions were pulled from the IU Grade Distribution Database published by the Office of the Registrar. All courses for which there was confirmed MyLab use since Fall 2012 were pulled. Student grades and withdrawals during the period before Inclusive Access was implemented (Fall 2012 to Spring 2015), and after Inclusive Access was implemented (Fall 2015 to Spring 2019), were analyzed.

Due to MyLab course deletion policies, much of the pre-Inclusive Access course data was not available. As a result, MyLab usage could only be confirmed for a subset of courses in the pre-Inclusive Access period and for a much larger group of courses in the post-Inclusive Access period. This resulted in a sample size of 476 students in the pre-IA period and 5087 in the post-IA period.

As shown in Fig. 14.2, student outcomes have improved since Inclusive Access has been implemented, with gains in the percentage of students scoring A or B in the course and decreases in the percentage of students receiving a C, D, I, or W grade. Due to the many variables that may have caused this change, we can only point to an association between Inclusive Access and improved student outcomes. The differences in proportions between the pre-Inclusive Access and post-Inclusive Access

Table 14.2 Significance for differences in grade distribution using the z-test for proportions ($\alpha < 0.05$)

	z-Score	p-Value	Significance at α <0.05
A	2.0613	0.0197	Yes
B	4.6226	<0.00001	Yes
C/P	−4.3745	<0.00001	Yes
D	−2.0134	0.02222	Yes
F	1.5634	0.05938	No
W/WX	−1.6378	0.0505	No
I	−4.8059	<0.00001	Yes

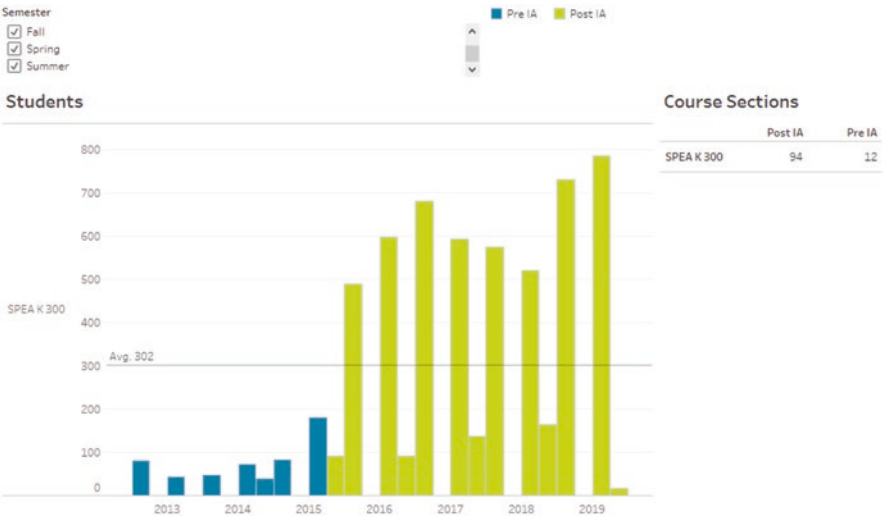

Fig. 14.3 MyLab statistics enrollments with student MyLab activity

groups are statistically significant in the A, B, C/P, D, and I categories ($\alpha < 0.05$) (see Table 14.2).

MyLab Test and Quiz Scores

Data pulled from Pearson's MyLab data stores included 550 students in the pre-Inclusive Access sample and 5482 students in the post-Inclusive Access sample.

Figure 14.3 summarizes student scores on MyLab quizzes and tests between Fall 2012 and Spring 2019. Student performance on tests and quizzes in the post-Inclusive Access group was much higher than before Inclusive Access was implemented. Eighty percent (80%) of students in the Inclusive Access group scored an average of 70% or above on quizzes and tests, whereas only 55% of those taking the

course before Inclusive Access reached that threshold. Average scores by week and overall scores show consistently higher values in the post-Inclusive Access group. This difference in proportions is statistically significant at $\alpha < 0.01$ ($\zeta = 13.432$, $p < 0.00001$).

Student Engagement

To determine when engagement was occurring and how intensively, student assignment submissions relative to semester start dates were analyzed from MyLab platform data collected between Fall 2012 and Spring 2019. Engagement patterns in semesters before and after Inclusive Access were compared to determine if student engagement and activity has changed significantly with first-day access to course materials.

Student Enrollments

The number of MyLab enrollments rose following Inclusive Access implementation. Although the older historical MyLab data may not be complete due to course deletion policies, there is a substantial and immediate spike in the number of students per semester that enrolled in the system (Fig. 14.4).

Assignment Submissions

Timeliness of student completion of homework, Study Plan, and assessments (tests and quizzes) were analyzed before and after implementation of Inclusive Access. In addition, the total percentage of students submitting each of these assignments over the course of the semester and during the first month was analyzed separately. Results are visualized in Figs. 14.5, 14.6, and 14.7.

For homework assignments, the percentage of students submitting homework assignments overall and during the first month is noticeably greater for the Inclusive Access group beginning with the second assignment of the semester. For homework assignments 4–7, the percentage of student submissions overall is greater for the Inclusive Access group. In addition, the submission rate of homework assignments 4 and 5 during the first month of the semester was three times higher after Inclusive Access was implemented. When analyzing weekly homework submissions, a high percentage of student submissions occurred earlier in the group with Inclusive Access. For example, a large percentage of students submitted homework assignments 4 and 5 a full week earlier in the post-Inclusive Access group than students in the pre-Inclusive Access group.

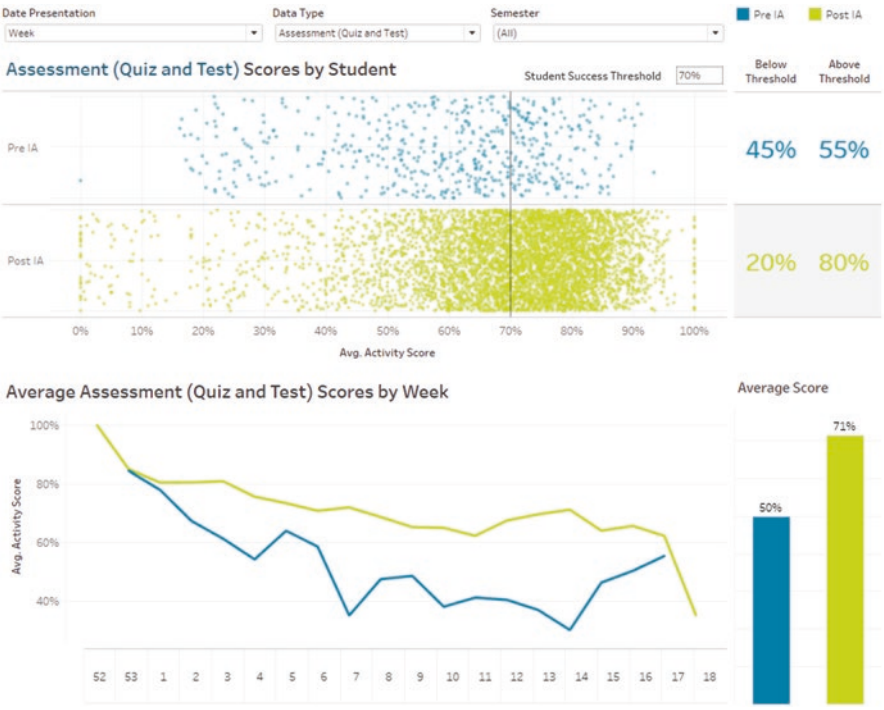

Fig. 14.4 Assessment (test and quiz) score distribution before and after Inclusive Access (top left), percentage of students in the pre- and post-Inclusive Access groups meeting the 70% score threshold (top right), average test score by month (bottom left), and overall average assessment scores (bottom right)

Early-semester submissions of Study Plan work occurred consistently in the Inclusive Access group, as shown in Fig. 14.6. In the pre-Inclusive Access group, Study Plan use was limited and increased over the course of the semester. This is most likely because the instructor began to require the completion of the Study Plan in Spring 2016.

The completion rate of assessments (tests and quizzes) was not higher in the post-Inclusive Access group. However, earlier completion of these assessments can be observed for assessment 4 and 5 in the post-Inclusive Access group (Fig. 14.7).

Conclusion

Overall, in the Statistical Techniques course at Indiana University, Inclusive Access can be associated with improved student grades, lower withdrawal rates, increased course enrollments, and better performance on MyLab assessments. In addition, student completion of homework and Study Plan assignments was higher in the

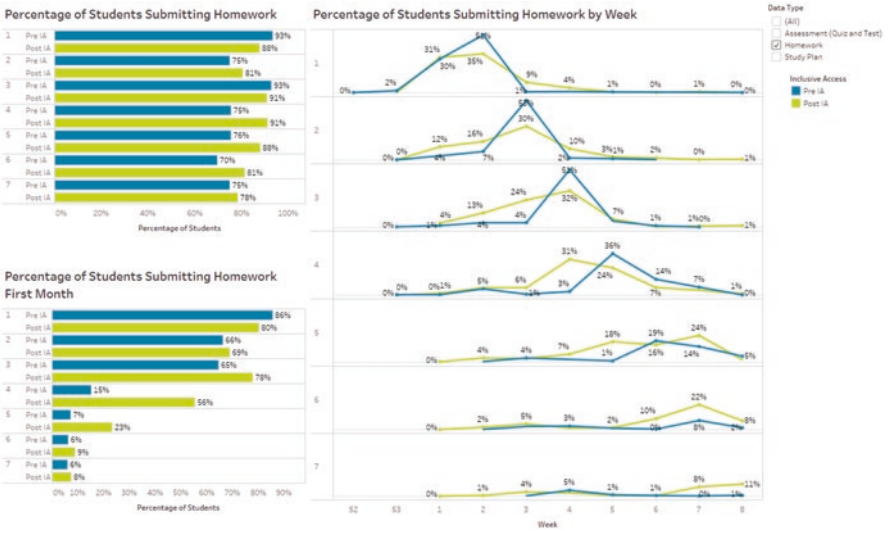

Fig. 14.5 Comparison of percentage of students submitting each of the first seven homework assignments per week before and after Inclusive Access implementation. The upper left graph shows the total percentage of students who submitted each assignment over the course of the semester, the lower left graph shows the same for the first month of the semester, and the right graph shows a breakdown by week

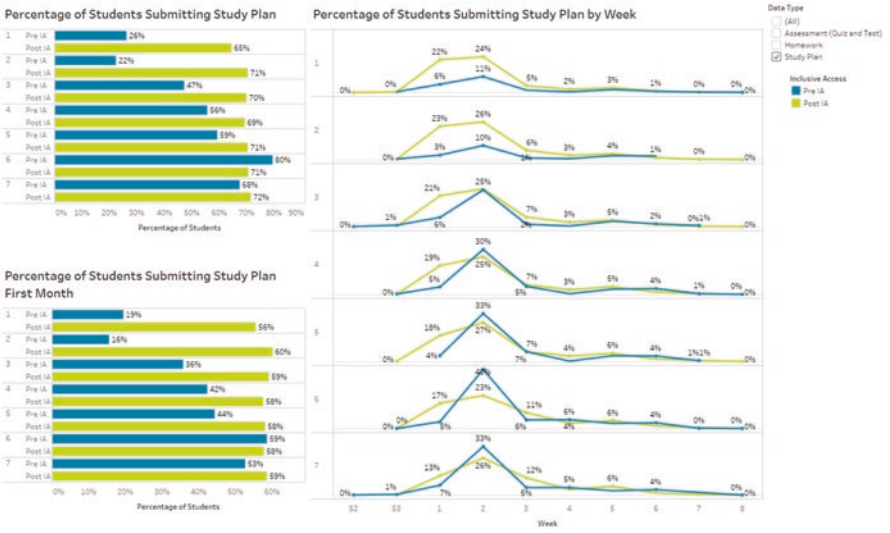

Fig. 14.6 Comparison of percentage of students submitting each of the first seven Study Plan assignments per week before and after Inclusive Access implementation. The upper left graph shows the total percentage of students who submitted each assignment over the course of the semester, the lower left graph shows the same for the first month of the semester, and the right graph shows a breakdown by week

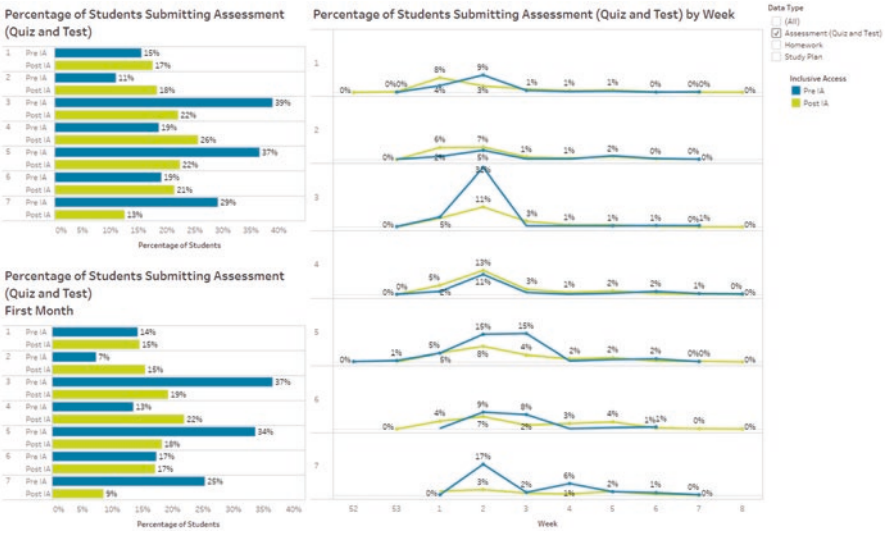

Fig. 14.7 Comparison of percentage of students submitting each of the first seven tests and quizzes per week before and after Inclusive Access implementation. The upper left graph shows the total percentage of students who submitted each assignment over the course of the semester, the lower left graph shows the same for the first month of the semester, and the right graph shows a breakdown by week

post-Inclusive Access group. Students reported that the Inclusive Access program has enabled them to access course materials more quickly, easily, and effectively. In addition, according to Dr. Wakhungu, implementing the adaptive Study Plan has allowed students to take ownership of their learning and leave the course with a better attitude toward mathematics in general. "When they leave the course, the students talk with confidence about statistics and its applications. They don't just take the course to pass. They walk out with a higher self-esteem and take pride in the knowledge that they have gained in the course. The course materials are being used by the students, and they are making an impact on student confidence and excitement."

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Chapter 15
E-Textbooks, Inclusive Access, and Academic Performance

Tracy A. Hurley and Amir Fekrazad

Background

As the price of higher education continues to increase [10], many administrators are investigating ways to reduce costs. Given that the price of college textbooks rose 88% between 2006 and 2016 [2], initiating e-textbook programs is becoming a more popular strategy for accomplishing this objective. While e-textbook programs may reduce costs, it is important that they do not have a negative impact on student performance. For instance, students who are not comfortable with technology or have limited access to technology may have a reluctance to embrace the new technology or lack the opportunity to read their e-textbook. Other students who work all day in front of a computer may resent the requirement to sit in front of their computer to read their course e-textbook. Ideally, of course, they would reduce costs while also having a positive impact on academic performance by, at a minimum, providing required course content before the first day of classes.

Several articles review e-textbooks and a variety of factors to include the following: student preference [7], student attitude toward using e-textbooks ([6, 3], culture and demographics [1, 4], and student perception of learning [8].

Very few articles, however, are available which review the impact of e-textbooks on academic performance. Chulkov and VanAlstine [4] and Daniel and Woody [5] as well as Taylor [9] found that there was no difference in academic performance (Chulkov and VanAlstine; Daniel and Woody) and comprehension (Taylor) based on textbook medium (i.e., electronic, print, used) choice. In general, with one of the major objectives of initiating an e-textbook program to reduce costs, the finding that there is no performance *difference* is a generally positive benefit.

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Program Goals

In 2010, an institutional e-textbook (Inclusive Access) program was initiated at a small public university in Texas. Originally, the program had four major goals:

1. The cost of e-texts would be no more than 10% of tuition and fees.
2. Academic freedom rests with the faculty.
3. Students enrolled in courses that are part of the e-text program will have access to the required content needed to be successful in the course by the first day of classes.
4. Students would have access to a printed copy of their e-texts.

Program Structure

The E-textbook program is an Inclusive Access (IA) program. In 2019, the program has contracts with 13 publishers. Each of these contracts are negotiated in order to best serve the needs of faculty and student as well as to minimize the cost of course content to students. Depending on the subject, some e-textbooks are more expensive than others. For instance, most business e-textbooks are more expensive than e-textbook found in the humanities. This differential pricing structure results in students paying for their content based on the price of the hard-copy equivalent and not a university average cost.

The three major publishers (McGraw-Hill, Pearson, and Cengage) make up the vast majority of the e-textbook inventory. In general, each faculty member at the university can elect (or not) to have their class (or classes) be part of the e-textbook program. Once the faculty selects an e-textbook(s) for their class, a course fee to cover the cost of the e-textbook is added to the students' tuition and fees. This fee includes a $3 per course administrative fee to help defray the cost of program administration. The e-textbooks are loaded into the university's Learning Management System where students are given access to the e-textbook prior to the first day of class. In 2019, about 41% of the courses at the university elected to participate in the program.

Costs

For the first semester in Fall 2010, the e-text program served about 1250 students, 30 faculty (including some part-time faculty), and 100 courses and issued 4,600 e-texts. The average course fee was $64 which represented 9.5% of tuition.[1] The

[1] For more detailed information about program initiation and adoption, please see the Case Study Chapter earlier in this volume.

program continues to advocate for lowering costs to publishers as new contracts are signed. For instance, in 2018, the program provided e-textbooks to 1,020 courses and 11,639 students across all three colleges at the university (i.e., Arts and Sciences, Business, and Education). The average cost for e-textbooks in 2018 was $71 which represented only 6.9% of tuition. During this same time, tuition and fees increased about 52%. Although the actual cost for e-textbooks increased about 10% between 2010 and 2018, the contribution of the cost of course content to the total cost of higher education was reduced and it stayed well under the goal of 10%.[2]

Impact of the E-Textbooks on Student Success

After having demonstrated that an institutional (IA) E-textbook program meets the goal of reducing the cost of higher education for students, this study will investigate whether students enrolled in e-textbook classes have better student success rates than students enrolled in courses which adopted traditional, print-based (or no) textbooks.[3]

Method

Three years of data was collected from the university's Student Information System, BANNER, following the Spring 2019 semester. The years of data represent academic years 2016–2017, 2017–2018, and 2018–2019. The following information were collected:

- Course grades.
- Course delivery modality (technology enhanced or face to face).
- Demographics (ethnicity and gender).
- Courses were identified as belonging to the E-textbook program or not.
- Courses were identified as belonging to one of the three colleges at the university (Arts and Sciences, Business, or Education).

In total, the data collected included 12,977 unique students in 3,658 classes (902 unique courses).

[2] Note that these costs include all electronic homework packages adopted by faculty for their courses.

[3] It is important to note that the e-textbook program includes a low-cost print option that students may elect to purchase and there is no way to determine whether the student actually used the electronic version, the optional print version, or a combination of both.

Results

To examine the impact of using e-textbooks on student outcomes, student success rates were compared between courses that used e-textbooks and courses that did not. Ideally (in an experimental setting), the assignment of e-textbooks or printed textbooks to courses would be done randomly. However, in this study, the assignment is based on the decision of an instructor as to whether or not to adopt e-textbooks for the course he/she teaches. Nevertheless, this comparison can shed light on the benefits of the e-textbook program on student success.

A student's success in a course (success = 1) is defined as passing the course with an A, B, or C grade. Otherwise, failing the course (receiving a D or F) or not finishing the course (withdrawal for any reason) is considered not a success (success = 0). We then compared the average success rate among different groups of students.

The results of the analysis are presented in Table 15.1.

In general, the success rate for students enrolled in e-textbook courses is about five percentage points higher than the success rate of students enrolled in printed textbook courses, and the difference is statistically significant (p-value <0.01).

Next, subgroups of data were analyzed and compared to provide a better understanding of how textbooks improve academic performance.

To make the compared groups more similar, the sample was restricted to only courses that have some sections taught with an e-book and some without.[4] A total of

Table 15.1 Comparison of success rates among different groups

Sample/subgroup	Does *not use* e-textbooks	*Uses* e-textbooks	Statistically significant ($p < 0.05$)?
All	80.30%	84.96%	Yes
Undergrads	78.87%	84.40%	Yes
Graduate	94.17%	89.68%	Yes
Female	81.99%	85.91%	Yes
Male	77.12%	83.67%	Yes
Younger than 25	77.96%	82.90%	Yes
Between 26 and 40	84.67%	87.56%	Yes
Older than 40	85.55%	88.22%	Yes
Eth: White	85.10%	88.45%	Yes
Eth: Hispanic	80.98%	86.19%	Yes
Eth: Black	77.20%	80.99%	Yes
Instructional method: Face-to-Face	78.97%	81.71%	Yes
Instructional method: Hyflex	93.09%	86.64%	Yes
Instructional method: Hybrid	91.77%	88.75%	Yes
Instruction method: Online/ distance education	78.52%	90.46%	Yes

[4] In other words, we drop courses for which all sections are taught with e-textbooks or all sections are taught with printed textbooks.

112 courses (out of 902) were included in this subgroup analysis. The results still show a positive effect of using e-textbooks on the success rate (84% vs. 80%).

See Table 15.1 for all subgroup results.

The data suggests that undergraduate students saw a significant improvement in success rates when enrolled in courses utilizing e-textbooks (improvement of 6 percentage points), while the performance of graduate students saw the opposite effect (4 percentage points). This finding could be due to undergraduate courses being more textbook heavy. The other plausible reason is that undergraduate students are on average younger and hence more accustomed to reading electronic content from a computer screen. Breaking down the results by age supports this hypothesis as younger (25 years old or younger) students benefited more from e-textbooks than middle-aged (26–40 years old) or older students (41 years old or older).

A breakdown by ethnicity shows that while students in all ethnic groups saw an increase in their success rate from using e-textbooks, Hispanic students experienced the largest improvement.

Students of both genders also experienced higher success rates when they were enrolled in e-textbook courses.

Among different instructional methods (face to face vs. technology enhanced[5]), students enrolled in face-to-face courses show an increase in success rate, while students in the technology-enhanced courses experienced a decrease in their success rate. This outcome is surprising because we expect courses that rely on the use of computers and the Internet should be naturally complemented with an e-textbook.

Overall, these results reveal that using e-textbooks has a positive impact on student success, especially for undergraduate/younger and Hispanic students.

Discussion

The results from this study represent the results from one of the oldest (originated in 2010) and largest, public university institutional e-textbook programs in the United States. Although only the last three years of data were used in the analysis, this is due to the earlier data being comingled with a shared instance of the BANNER system and coding inconsistencies – and not due to an exclusion of data for any other reason. While the program updated procedures between 2010 and 2016, faculty/course participation in the program has always been just between 40% and 50% and participation has always been a faculty option. With university demographics being consistent over this time period, the only major change has been the growth of the student body. This growth led to a higher number of students and courses

[5] Technology-enhanced courses are categorized as either hybrid or Hyflex formats. Hybrid classes are approximately 50% face to face and 50% asynchronously online. Hyflex classes are taught face to face but students may also elect to attend synchronously or asynchronously online (at their discretion).

participating in the program year over year, but the percentages (course participation and student demographics) across the university have been fairly consistent.

Overall, the results suggest that students enrolled in courses which utilize e-textbooks experience higher success rates than students enrolled in courses which do not utilize e-textbooks. There are, however, some exceptions. For instance, younger or undergraduate students experienced higher success rates, while graduate students did not. Furthermore, students enrolled in face-to-face courses (versus technology-enhanced courses) experienced higher success rates. Lastly, there did not appear to be any differences in success rates due to ethnicity especially in Hispanic students; that is, students in all ethnic groups experienced higher success rates when enrolled in e-textbook courses.

The data from this study support the hypothesis that institutional e-textbook programs – which ensures students have access to required course content by the first day of class – are effective in increasing student success rates. In addition, historical price information confirms that IA e-textbook programs are effective at reducing the costs associated with textbooks and, accordingly, the cost of higher education.

While this IA program was very diligent in negotiating directly with publishers and successful at keeping the cost of e-textbooks to less than 10% of tuition, this outcome is dependent on the ability of administrators, at their respective schools, to negotiate individual pricing structures. The current environment in the textbook-publishing industry is extremely competitive and, thus, favorable to such negotiations. This may not always be the case as the industry continues to consolidate into only a few publishing houses. Co-op or other multi-university agreements may increase the ability of universities to maintain reasonable price structures.

Although this particular program does not include Open Educational Resource (OER) content directly, it does facilitate the use of content from publishers such as OpenStax if a faculty member requests it – just as it would from any other publisher. A second but just as important concept is for the program to keep an eye on the goal, that is, the goal of reducing costs to students. Because of this, program staff are very careful to advise faculty as to whether used textbooks might be more price-advantageous than e-textbooks. This is often true if a faculty member adopts a relatively old textbook that has been in circulation for several years. It is also important to determine whether faculty will be adopting an electronic homework solution as part of their course. If this is the case, often the used textbook might be cheaper but when the student has to purchase the electronic homework solution, the resulting price to students is often higher than the price that the e-textbook program provides.

One common issue with IA programs is how to handle late registration, course withdrawals, and course retakes. For instance, this program is invoiced for e-textbooks based on census-day enrollment. If a student changes courses (i.e., add/drops) before census date, they are not charged for their e-textbook until the census date. Unfortunately, if a student drops a course after the census date, they pay for the e-textbook; if a student has to retake the course, they are charged for the e-textbook again. This is due to more of a technological restriction of the student information system than the program policy.

A second common issue is the fear that students will not have access to past e-textbooks after they graduate. That is especially important for several majors (mostly graduate students) who will ultimately sit for a licensure exam and need their old textbooks to study. While this program negotiates contracts with publishers that average three years in length (that is, students have access to their e-textbooks, on average, for three years), the program also allows for students to order a relatively inexpensive black and white printed copy of the e-textbook. Ultimately, this alternative seems to suffice for most of these students.

As third-party bookstores try to compete in this space, it will become more difficult for independent university programs to maintain independence. Ultimately, the university will need to determine whether the bookstore programs can meet the needs of students, faculty, and the university. Bookstores which require "exclusivity" clauses in their contracts may prevent a university program from maintaining its independence. This independence, however, is crucial for ensuring that the needs of students, faculty, and the university are met in the future and not simply met during the time for which the bookstore establishes their first contract with the university. Once the bookstore establishes their program, it will be difficult for the university to ensure price and availability program goals are met due to the relatively high opportunity costs of starting/restarting an e-textbook program.

As universities look for strategies to improve student success and reduce the cost of higher education, institutional e-textbook programs provide many advantages. The results of this institutional e-textbook program provide support for both goals while, at the same time, maintaining academic freedom for faculty. Programs can be customized to meet campus needs and can adapt as needed and as technology evolves. As the industry consolidates and as third-party bookstores try to compete in this market, administrators may encounter more challenges to maintaining independence. Ultimately, the campus will need to determine the best strategy to follow based on the needs of students, faculty, and the university.

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